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1038 Henry Building

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485 California Street

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530 West 6th Street

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No. 24

In This Issue

Pennsylvania Constructs Engine

Terminal at Harrisburg Page 837

An article describing the \$2,000,000 project recently completed by the P. R. R.
in connection with the extension of its electrification into this area.

General American Light-Weight

All-Welded Box Car 843

A description of the unusually flexible modern design built by this company,
readily adaptable to varying requirements, featuring a continuous automatic
and fusion welding by a new Unionmelt process.

Rail Motor Cars Solve Problems 846

Details of how the Missouri & Arkansas is meeting the problem of dwindling
passenger revenues by using economical units which attract business on a light
traffic line.

EDITORIAL

A Challenge to Present Rate-Making Practices 833

GENERAL ARTICLES

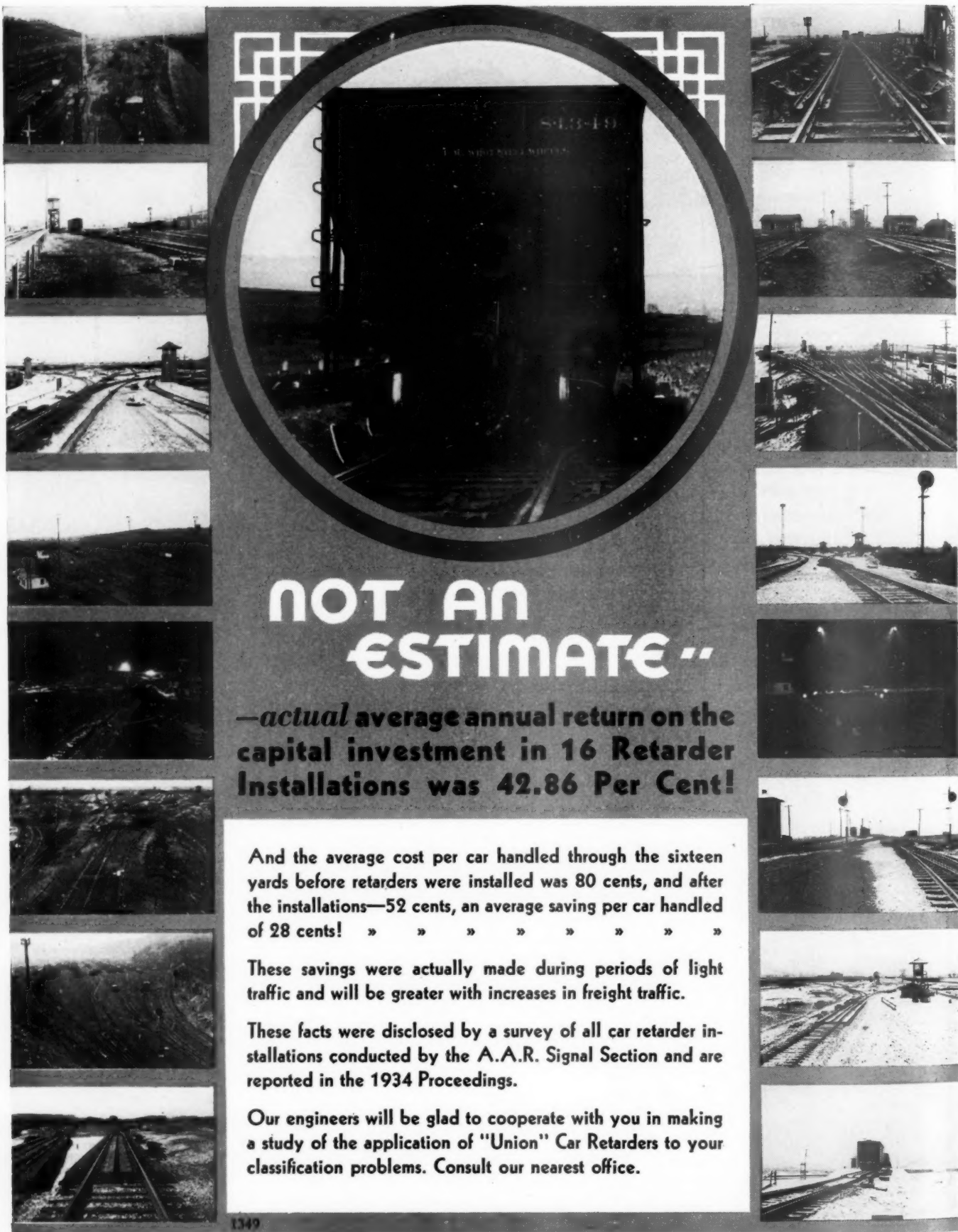
Pennsylvania Constructs Engine Terminal at Harrisburg 837
Definite Gains in Buying—Further Declines in Stocks 842
General American Light-Weight All-Welded Box Car 843
Anderson Spark Eliminator Shows Good Results 844
Rail Motor Cars Solve Problems 846
N. Y. Railroad Club Has Speeches in Print 848

NEW BOOK 848

NEWS 849

REVENUES AND EXPENSES OF RAILWAYS 864

The Railway Age is indexed by the Industrial Arts Index and also by the
Engineering Index Service



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ESTIMATE--**

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Installations was 42.86 Per Cent!**

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1349

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RAILWAY AGE

A Challenge to Present Rate-Making Practices

The railroads have often in recent years complained, and complained justly, that they are being regulated today as a monopoly, when in fact whatever they ever had of monopoly has completely disappeared. Now, however, has come forward a shipper—an influential and intelligent one at that—who says, in effect, that it is not the regulatory authorities alone who are out-of-date in treating the railroads as a monopoly; but the railroads themselves are guilty of the same lack of realism, in that they are seeking to maintain a monopoly basis of rate-making, during a period of intense competition.

What Will the Traffic Bear?

The shipper who makes this accusation is L. F. Orr, traffic manager of the Pet Milk Company, St. Louis, and he sets forth his views in a pamphlet entitled, "What Price Transportation?" which is the most challenging piece of literature which has appeared on railroad practices in many a long day. There are many questions we might raise regarding some of Mr. Orr's arguments and conclusions, but such differences as we may have with him are rather insignificant, in the light of two questions which he raises, the gist of which is as follows:

1. Whose analysis has demonstrated that the railroads must continue to lose traffic to competing forms of transportation?

2. Has anyone made a thorough analysis of the present method of pricing freight service and demonstrated that it fits modern necessities, and has not outlived its usefulness?

These questions are fundamental. Ever since economists and other students have observed and written about railroad transportation, they have accepted the "what-the-traffic-will-bear" theory of rate-making. Mr. Orr says he is not challenging that theory but, he insists, "what the traffic will bear" was one thing when the shipper could ship by rail or not at all, and it is

quite another thing today when he has alternative methods of transportation available to him.

The Rate "Ceiling" Has Been Lowered

The "ceiling" for the price of any commodity or service always has been and always will be the value of the commodity or the service to the prospective purchaser. That principle was in effect 25 years ago when there was no serious competition with railroad service—and, in those days, the principle justified some relatively high railroad rates. That is to say, the shipper of a high-value commodity could afford to pay a pretty high rate and still be ahead of the game over what he would be if he refused to pay the rate and, as a result, had to ship his product by horse and wagon. Nowadays, however, leaving out of account the availability of for-hire trucks, the shipper can always buy his own trucks if common carrier rates ascend very much higher than truck operating costs. Hence, whether for good or evil, the fact is that the "ceiling" to freight rates is much lower than it was a generation ago.

Most railroad men recognize the truth of this observation, but actually acting upon it as a guiding principle in freight-rate making seems to be a far more difficult matter than merely understanding it in the abstract. Custom and habit, and the fear that upsetting existing relationships may bring more grief than relief—these seem to be more potent forces in rate-making than does the action of objective analysis and pure reason. But such bowing to habit and custom, and timidity at "stirring up the animals" is not getting us anywhere.

Traffic Ought to Be 15 Per Cent Greater

Let anyone who believes that the trend of traffic away from the rails to competing agencies of transportation has been stopped just talk to an experienced traffic man. It has not been stopped. Mr. Orr's fig-

ures for the most part do not go beyond 1936, and the situation he describes as of that time is serious enough; but we all know it is worse today. Railroad ton-miles per capita, he discloses from a study of all the available evidence, were one-third less in 1936 than in 1920, with the depression accounting for only half of that loss. In other words, leaving the state of general business entirely out of account, railroad traffic in 1936 would have been 15 per cent greater than it actually was, if it had not been for the growth of competing agencies of transportation and the growing decentralization of industry.

The inroads on traffic caused by the decentralization of industry, Mr. Orr believes, are a most important part of the railroads' difficulty. The growth of traffic by all agencies of transportation has not been keeping pace with the growth of population because, with the waste of duplication from which transportation is suffering, transportation as a whole has been laggard in improving its efficiency; and shippers have been looking for, and finding, cheaper substitutes, not only for railroad transportation, but for any transportation at all.

Viewed from this angle, the problem of competition between the railroads and other forms of transportation becomes, not so much a search for ways and means whereby the railroads can recapture traffic from their competitors, as it does a search for a more economic division of traffic between the various agencies of transportation—so that transportation by all agencies may be made cheaper for consumers; thus removing from them the temptation to devise substitutes for it.

The method by which traffic can be reshuffled, giving each transport job to the agency which can handle it most economically, without fear of "chiseling" competition by another form of transportation, Mr. Orr contends is a rate structure for both railroads and trucks, based on the unit costs of each, and with freight classified, not according to value, but according to weight per cubic foot, with allowances being made for traffic subject to heavy loss and damage claims. If his analysis is correct, the railroads would not only gain more revenue from this device, but they would regain a tremendous tonnage now being uneconomically handled by truck.

Rate Practices Which Divert Traffic to Trucks

The facts and the reasoning by which he arrives at this conclusion are too long and too complex to be given here, but one or two observations he makes are too important to overlook. One is that *basing truck rates on the railroad classification of freight simply gives the trucks more money for the short hauls than they are in justice entitled to, thus giving them excess earnings which enable them to reduce their long-haul rates and invade unjustifiably the legitimate field of railroad transportation.*

Comparison of railroad and truck unit costs has convinced Mr. Orr that, if both truck and railroad rates were based upon their comparative costs, and with traf-

fic classified by its weight in relation to its bulk, trucking of less-truckload traffic would be limited to a radius of 200 miles; and truckload transportation would have a radius not greater than 100 miles. The trucks are now handling traffic over much longer distances because:

1. Present tariffs make it possible for them to pick and choose their traffic, selecting those commodities which bear railroad rates which are high in relation to the cost of handling—thus leaving the railroads the traffic which bears rates low compared with handling costs. Thus it is that the trucks carry the paint and the canned goods, and the railroads get the empty cans, the lamp shades and the canoes.

2. Present rate-making policies enable the trucks to make bargain rates on return loads, thus assuring themselves of a high proportion of loaded movement, leaving the railroads to assume the burden of empty movement where traffic is unbalanced in direction.

The fact that railroad rates are not now meeting truck competition, but that they could meet this competition if their rates were based upon costs of handling, rather than upon a fancied "what-the-traffic-will-bear" theory, Mr. Orr demonstrates with the following table, using fifth class rates and unit costs in Official territory in cents:

Miles	Rail Rate	For-hire-truck Cost	Rail Cost
100	22	12	12
200	29	20	16
300	33	28	19
400	39	36	22
500	43	44	26
600	47	52	29
700	52	60	32

Are Present Practices Illegal?

The kind of rate-making which now prevails, in Mr. Orr's opinion, violates the Motor Carrier Act in that it violates the duty put upon the Interstate Commerce Commission by that Act, to regulate motor transport so as to preserve its "inherent advantages" and to "foster sound economic conditions" in such transportation. He goes further and suggests that the acts of some of the Commission's employees in assisting some of the trucking organizations to agree on rates, later to be given official recognition, are illegal; and that the Supreme Court has held that similar action, when engaged in by railroads, has been in violation of the Sherman Act.

In this whole broad indictment of present rate-making practices, it seems to us that one of the most effective points Mr. Orr makes is that *present rates are not actually made on the theory of "what the traffic will bear," or the "value of the service" principle.* This allegation he proves by the citation of a number of specific instances. For example, flour valued at 3 cents a pound and having a density of .35 lb. per cubic foot pays 30 cents per 100 lb. for a 200-mile haul, while canned tomatoes, valued at 2½ cents per pound and loading 45 lb. to the cubic foot, pay 44 cents for the same haul. The "value of the service" principle is clearly violated here in favor of flour and against

tomatoes. And, our critic continues, the higher rate cannot be justified on the ground that canned tomatoes are more subject to damage than flour—in fact, the exact opposite is the case.

Actually, in other words, there is today no consistently-held theory of competitive rate-making which is being followed. What we have is the relic of a "what-the-traffic-will-bear" theory, now utterly broken down and denatured. Chaos is the result, and chaos will remain until some one has the courage to declare that the corpse is a corpse, and take steps to give him a decent burial; and to install a theory of rate-making in keeping with present-day realities to take the place of the deceased.

"Value of Service" Theory Unsound Under Competition

As we stated at the beginning, we could give Mr. Orr an argument on some of his contentions. Moreover, we are not at all convinced that as complex a problem as this one is will be resolved by the simple solution which he proposes for it. Nevertheless, it must be evident to any unprejudiced reader of Mr. Orr's pamphlet that a very large part of his criticism of the *status quo* is absolutely sound, and that the conditions which he reveals reflect no credit upon any of the

parties which have to do with rate-making—either the railroads, the truckers, the regulatory authorities, or the shipping community. After all, there is not much point in loyal railroad employees and public spirited citizens demanding that railway competitors shall pay a larger share of the true costs of their service, as long as not even the costs which they now pay are reflected in their competitive rates.

The public interest demands that traffic be divided among the several agencies of transportation on a basis of their comparative costs. *But traffic does not follow comparative costs; it follows comparative rates.* Rates on non-competitive traffic can, in the public interest, continue to be made on the "value of the service" principle. But such rates can be made on competitive traffic only at the risk of diverting traffic from a more economical agency of transportation to one which is less economical, to the grave injury of the national income. Persons with the public interest at heart—who wish to make the nation wealthier by reducing the colossal waste now taking place in transportation—must not insist alone that each agency of transportation stand upon its own economic feet, without public subsidy. They must go further and insist, at least as far as competitive traffic is concerned, that rates be made which will reflect comparative costs; so that traffic will flow through the most economical channels.

The Investing Worm Has Begun to Turn

What kind of a "New Deal" have we had for the last six years for the widows and orphans and our substantial citizens who have reached the age when they should be able to retire and enjoy the fruits of their lifetime savings? The New Deal has been looking after some so-called "forgotten men." But, how about the 15,000,000 stockholders in our industrial enterprises? What is now their reward for furnishing the capital that has made possible the growth of this nation into the richest country in the world, in the shortest period of time in history? What has it cost 45,000,000 savings bank depositors to have their interest reduced steadily from 4½ per cent to 2 per cent?

Should they demand, by organized effort, that their income be maintained at the 1929 rate, as our railroad employees have demanded with such success? Should they strike and withdraw their money from the banks, and put it in a secret hiding place? How about the 64,000,000 life insurance policy holders, whose invested funds have been furnishing the major capital represented in bonded indebtedness? On January 1, 1939, the life insurance companies are reducing, in new contracts, the guaranteed, minimum returns. The widows' and orphans' income will be less. Meantime, policy holders should make note of the reduced dividends that they have been receiving.

Somebody says "capital is on strike." Who are these capitalists? Just ordinary, every-day, thrifty, law-abiding citizens, who are losing, or have lost confidence. Their only offense seems to be that they have invested their savings, hoping to avoid the necessity of relief in their declining days.

The unions have collective bargaining—but not the stockholders. The time has also arrived when we must have collective bargaining through organized stockholders. After continued promises of relief, our railroad executives,

in accordance with the law, finally filed notice of an intended 15 per cent cut in wages. The halls of Congress are cluttered up with facts found by committees. The Fact Finding Committee, recently appointed to discuss this proposed wage rate reduction, has finally recommended that the request be withdrawn. The railroads are sick and the coroner may have to be called soon, instead of Fact Finding Committees.

For years we have heard much about the economic advantages of the consolidation of certain railroads. But, why has nothing been done about it? Because railroad labor says it will not permit consolidations if they are going to result in a saving of labor expenses. In other words, the railroads can save in any way they may find possible providing it comes out of someone else. Is that an evidence of loyal cooperating employees? Usually, what is good for a business is also good for its employees.

Railroad employees should change their tactics and give an example of co-operation before it is too late. Railroad stockholders have a right to expect their employees to co-operate to meet temporary situations. Time and again, when they could have used their organized efforts to help the railroads get increased income, they sat idly by with apparent indifference.

I believe collective bargaining should not be for the exclusive benefit of organized labor. Instead there should be collective bargaining with and between all parties at interest in our great corporations, especially the railroads.

Let us try to get the "business goose" on her feet again. Then, with proper nourishment, we might coax her to resume laying golden eggs. At present we have a dying goose on our hands and we are consuming the eggs in the storehouse that were laid long ago.

From an Address to the Recent Meeting of B. & O. Stockholders by J. Newcomb Blackman, Vice-Pres., American Assn. of Investors

Pennsylvania Constructs



Panoramic View of the New Terminal, Looking West From the Top of the Coaling Station

Project costing \$2,000,000 carried out in connection with extension of electrification to this point — Obsolete units replaced

COINCIDENT with the extension of its electrified trackage westward from Paoli, Pa., to Harrisburg*, the Pennsylvania has built an extensive new locomotive terminal at the latter point at a total cost of approximately \$2,000,000. Not only does the new terminal embrace the facilities made necessary by reason of the fact that Harrisburg is now a change-over point between steam and electric power, but in large part the project involved the practically complete replacement of the existing steam-locomotive terminal which had become obsolete not only from a physical viewpoint but in arrangement as well.

Original Facilities Obsolete

Extension of the electrified trackage to Harrisburg made necessary the incorporation in the existing terminal of facilities for handling, servicing and making light repairs to electric locomotives. But even before electrification came into the picture consideration had been given to the need for the replacement and rearrangement of practically the entire terminal because of obsolescence and other factors.

Originally the locomotive terminal facilities at Harrisburg included two enginehouses of brick construc-

tion, one of which, known as No. 1, was devoted exclusively to the handling of passenger locomotives, while the other, known as No. 2, was used for the repair and servicing of freight locomotives. Enginehouse No. 1 was built in 1877 and contained 40 stalls, while enginehouse No. 2 was constructed 10 years later and had 39 stalls. For a number of years, the policy has been followed of concentrating repair work on freight locomotives in this district at the Enola yard, which is just across the Susquehanna river from Harrisburg, with the result that by 1932, demands on the enginehouses at the latter point had been reduced to such an extent that it became possible to abandon enginehouse No. 1 and consolidate work on both passenger and freight locomotives in the freight enginehouse. This facility, however, in addition to being near the end of its service life, had only one drop table, contained no heating system, had no doors in the inner circle wall, and did not have stalls of sufficient length to accommodate the heavier power with the longer tenders that was coming into vogue.

Other facilities at the terminal were also in need of modernization or replacement. These included a two-track timber trestle type coaling station of 300-tons capacity, which was built in 1900 and which had been raised several times to allow for the increasing height of locomotives; a steam sand-drying plant which did not have sufficient capacity to satisfy the requirements of the terminal; inefficiently lighted engine inspection pits;

* The physical characteristics of the electrification project proper were described in an article by H. C. Griffith, electrical engineer of the Pennsylvania, in the *Railway Age* of February 19.

Engine Terminal at Harrisburg

and obsolete water storage tanks. Furthermore, both the drainage and water distribution systems were in need of renewal and the existing engine washing equipment was obsolete.

Other units of the old terminal included two ash pits which, although giving satisfactory service, required the use of direct current; two locomotive erection shops which were rendered unnecessary by the transfer of heavy repairs to other points; a blacksmith shop; a rod and wheel shop; a storehouse and machine shop; a passenger-coach repair building, and other miscellaneous buildings including one housing a steam power plant that embodied six 125-hp. locomotive-type boilers. Housed in the same building were three compressors, one motor-driven and two steam-operated, which served the entire terminal and station area. The buildings comprising the old terminal were located, for the most part, in the vicinity of the easterly throat of classification yard No. 1.

The New Facilities

In the recently completed improvement program, all of the facilities named above were retired and the operations transferred to new structures which include a 30-stall enginehouse embodying a 125-ft. turntable, the longest on the Pennsylvania; a welfare building for employees, which adjoins the enginehouse; a machine shop also adjoining the enginehouse, which is built integrally with a storehouse and oil storage building; a two-track reinforced concrete wash table 125 ft. long, which utilizes high-pressure steam jets as the principal cleaning agencies and which embodies four counter-weighted hose racks; a three-track ash-pit layout involving two reinforced concrete water ash pits 220 ft. long and a loading track, all of which are spanned by a traveling crane operating on structural steel runways, the latter having been removed from the old ash pits; two 130-ft. reinforced con-

crete inspection pits; two concrete work pits, also 130 ft. long; an enginemen's and inspectors' building at the inspection pits; a storehouse and locker building at the work pits; four 50,000-gal. steel water tanks in batteries of two each; a trainmen's building; a small arch-brick storage building which also contains space for the storage of oxygen and acetylene cylinders, and a small ice house.

Also included is a three-track reinforced concrete coaling station having an overhead storage capacity of 750 tons. The storage pockets are served by two 63-cu. yd. skip-hoist buckets which are capable of transferring coal from cars to the storage pockets at the rate of 120 tons per hour. Situated overhead in the coaling station are two coal-burning sand dryers, each of which is capable of drying 10 tons of sand in 24 hr. Wet sand is elevated to the dryers by the skip-hoist buckets from a reinforced concrete wet-sand storage bin at the ground level which has a capacity of 75 tons.

Location of New Terminal

The new steam-engine terminal is situated north of the main body of tracks and somewhat west of the location of the original facilities. The enginehouse is the westernmost unit of the new facilities, with the other principal units arranged on inbound and outbound tracks that connect the terminal area with both the passenger and freight main tracks.

Somewhat east of the steam-locomotive terminal area are the facilities for servicing and making light repairs to electric locomotives. These include a 90-ft. reinforced concrete pit which is used for both inspection and repair purposes; a one-track structural steel sand tower which straddles the track and which has an overhead storage capacity of 19 tons of dry sand; a sand dryer of the same type and capacity as those at the

Showing the Manner in Which the New 125-Ft. Turntable Was Installed



passenger mains are located east of the enginehouse and west of the passenger station in the vicinity of the throat of the classification yard.

The Enginehouse Described

The new enginehouse has twelve 120-ft. and eighteen 140-ft. stalls. To a large extent of conventional construction, it embodies exterior walls of brick, concrete foundations, floors and pits, and a timber-supporting structure for the roof which carries a monitor. As is the case with all of the larger buildings, the roof consists of gypsum slabs covered with five-ply felt topped by a pitch and slag finish. All timber used in the enginehouse was treated with chromated zinc chloride, this preservative being used because of its fire-resistant qualities. The inner circle wall of the enginehouse is enclosed with hinged double-section doors at each stall and, as in the other large structures in the new terminal, is heated with steam by means of unit heaters.

At the east side of the enginehouse where it adjoins the machine shop, four of the longer stalls are served by an 80-ton drop table, from which equipment is handled into the machine shop by means of a 10-ton mono-rail hoist. At least one two-ton jib crane is provided at each row of columns in the enginehouse, and arc-welding, compressed air, water, boiler washing and cab-signal testing outlets are located at convenient points. Small motor-operated, forced-draft units of the type that is suspended from a mono-rail are used, one of which is provided for each four stalls. In the outer circle wall at each stall are metal tool boxes which project beyond the exterior face of the wall but which are flush with the interior face. Fire protection in the enginehouse is furnished by a steam-operated duplex pump having a capacity of 1,000 gal. per min., which is located in a pump room that projects from the outside wall. This room also contains a duplex steam pump for boiler washing purposes. Just outside of the pump room is the boiler-washing tank which contains circulating coils for heating the water. During the winter exhaust steam from the boiler wash-out pump and condensate from the

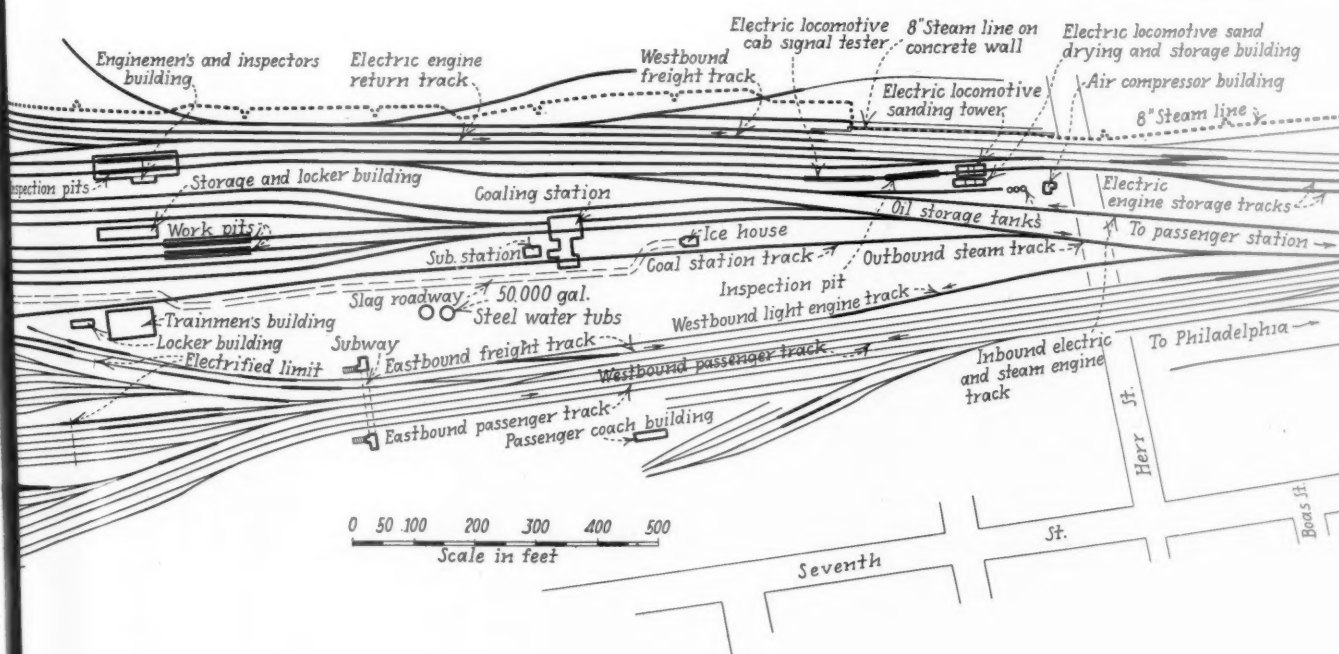
unit heaters are used to heat the boiler wash-out water, but since only exhaust steam is available for heating the water during the summer, provision is made for directing live steam into the coils in the boiler wash tank if this should become necessary.

The Machine Shop

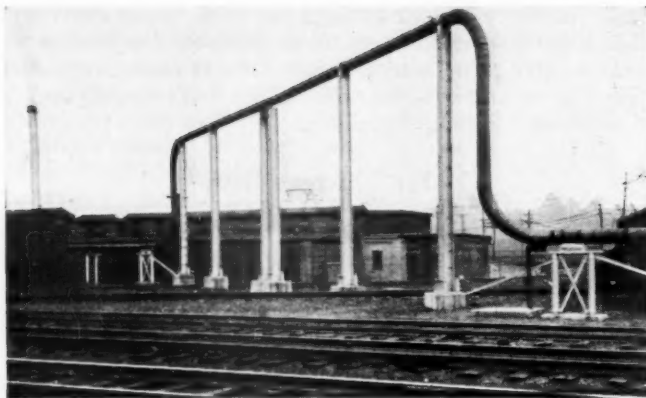
The machine shop, which is 78 ft. 5 in. wide and 178 ft. 9 in. long, is of structural steel and brick construction with a concrete floor and foundation and a roof similar to that on the enginehouse. Lengthwise, it is divided into a low bay and a high bay, the latter being 29 ft. 9 in. wide. The high bay is served by a 10-ton crane which operates on runways that extend the full length of the bay. The machine shop is otherwise provided with a full complement of machine tools needed in making light running repairs to locomotives. Other equipment includes four one-ton electric hoists in the low bay, an arc-welding generator, another for charging shop trucks, and a third for testing train-control apparatus, and two 345 cu. ft. motor-driven air compressors, one a standby unit, for supplying the air requirements in the machine shop and enginehouse.

In a continuation of the machine shop building to the east are contained oil storage space and storehouse facilities for serving the entire engine terminal area. This structure is 60 ft. long exclusive of a covered concrete loading platform 18 ft. wide which extends the full width of the building at the east end. Another platform 9 ft. wide extends along the north side of the building and is served by a side track. The major portion of this building is occupied by general storehouse facilities but along the northerly side a room 15 ft. 10 in. wide is devoted to the storage of oil. Underlying this portion of the structure and the 9-ft. platform is a basement containing five horizontal cylindrical oil storage tanks having a combined capacity of 40,000 gal. The storage tanks are filled from tank cars by means of individual wrought-iron fill boxes located in the floor of the 9-ft. platform.

The welfare building, which adjoins the enginehouse



The Heavy Lines Indicate New Tracks and the Other New Facilities Provided



A Feature of the New Terminal is the 7,000-Ft Steam Line, Which is Carried Across Tracks in the Manner Shown

on the west, is 60 ft. 9 in. wide and 133 ft. 6 in. long, and is similar in construction to the machine shop except that the walls are of unglazed hollow tile. This structure is devoted principally to facilities for the convenience of employees, which include five 54-in. wash fountains, steel lockers, toilets, showers and lunch tables, separate toilets and showers being provided for colored employees.

The building also contains office space for the engine-house foreman and his clerical force, record storage space, a first aid room, a lobby for enginemen and a room for the gang foreman.

Turntable of Special Interest

Of special interest is the turntable which, as stated previously, holds the distinction of being the longest on this road. This table is of the three-point support type and is propelled by a 75-hp. traction motor at each end. The circle wall and the floor of the pit are of reinforced concrete and the circle rails are supported on steel castings 8 in. long to which the rail is fastened by means of two clips at each casting. To prevent batter of the ends of the turntable rails they are heat-treated and, as a means of assuring that the ends of the enginehouse and yard tracks at the rim of the turntable pit will be held at the proper gage and elevation, the ends of the rails on each track rest on a $\frac{7}{8}$ -in. by 10-in. by 7-ft. 2-in. metal gage plate which is lagged to the timber cap on the circle wall by cut spikes. Lateral movement of each rail in both directions is prevented by 4-in. by 10-in. by $\frac{3}{8}$ -in. shoulder plates which are arc-welded to the gage

plates. Each rail is held down by four screw spikes which extend through holes in the plates into the timber support.

Two of the buildings in the terminal area, namely the locker and storage building serving the inspection and work pits and the enginemen's and inspector's building at the inspection pit, are of steel frame construction covered with corrugated siding which is lined on the interior. Both have concrete floors and foundations and roofs similar to those described for the other buildings. The storage and locker building is 18 ft. by 100 ft. in plan and, in addition to wash fountains, toilets, lockers and tables similar to those provided in the welfare building, it embodies an office for the foreman and a small store room. The enginemen's and inspectors' building, which is located adjacent to the steam-locomotive inspection pit, is 7 ft. 6 in. by 30 ft. 10 in. in dimensions and is divided by a transverse woven wire partition into two compartments, one for inspectors, which is 17 ft. 6 in. long, and the other for enginemen, which is 12 ft. 6 in. long.

The only engine terminal building that is not of new



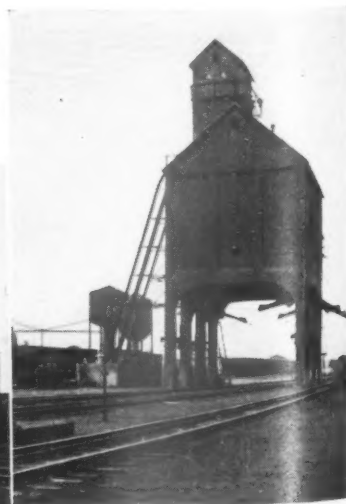
The Two Steam Locomotive Inspection Pits are 130 Ft. Long

construction is the trainmen's building which is a brick structure formerly used for the storage of oil. This unit has now been completely remodeled and embodies an office, lockers, toilets, wash fountains, showers, bunks and cooking space.

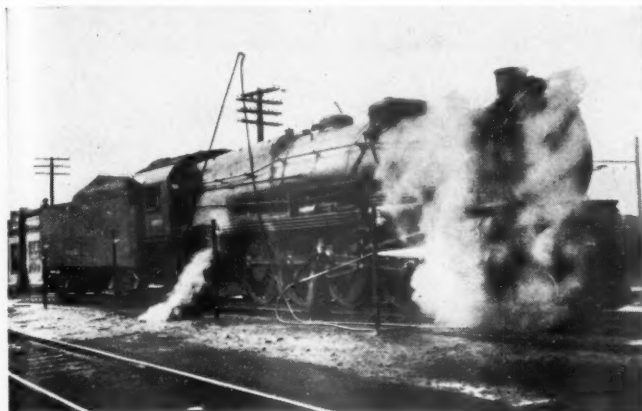
Most of the buildings comprising the new terminal are situated on a fill placed over the site of an old canal and because of the unstable character of the resulting foundation material all the larger buildings, together with the



Left—The Sanding and Other Facilities for Servicing Electric Locomotives. Center—The Ash Pit Layout Embodies Two Water Pits 220 Ft. Long. Right—The New Coaling Station, Which Serves Three Tracks, Has an Overhead Storage Capacity of 750 Tons



inspection and work pits and the ash pits are supported on caissons which are carried to bed rock. The caissons range up to about 25 ft. in depth and are either 3 ft. or 4 ft. in diameter depending on the load. Excavation for the caissons was carried on by hand with the aid of pneumatic spades inside of cylindrical steel shells which



High-Pressure Steam Jets are Used at the New Engine Washing Table

were sunk in sections 8 ft. long. All concrete used on this project was placed by the transit-mixed method.

Steam Line

An interesting aspect of the new terminal is the 7,000-ft. eight-inch welded steam line which delivers steam to the terminal buildings. As mentioned previously, the Pennsylvania formerly generated its own steam at this location, but coincident with the construction of the new terminal it inaugurated the policy of obtaining its steam requirements from an outside source. Under the new arrangement, steam is purchased from the Pennsylvania Power & Light Co., whose plant is situated north of the right-of-way about 1,200 ft. west of the passenger station. Steam is obtained from this company at a pressure of about 125 lb. per sq. in. and is utilized for heating all the larger buildings, including the passenger station, for operating the boiler washing and fire pumps and for washing locomotives.

In addition to the old power plant mentioned previously, adoption of the policy of purchasing steam also permitted the abandonment of a steam generating plant that was situated east of the passenger station, which formerly supplied steam for heating the passenger station and other buildings in the immediate vicinity, for operating hydraulic elevators in the station (now replaced with electric elevators), and for supplying train lines in the station area.

Steam Line Above Ground

From the plant of the power company to the passenger station, the steam is carried in an existing line that formed part of the old layout but, for conveying it to the new enginehouse and other buildings, it was necessary to construct a new steam line. Except for a distance of 100 ft. where it is carried underneath two tracks in the vicinity of the enginehouse, the new line is entirely above ground. To allow the line complete freedom of movement in adjusting itself to changes in length, it is supported at intervals on pipe posts by means of rollers, one at each post, which move in guides formed by sections of structural channels. Provision for expansion is made by inserting loops in the steam line at frequent intervals.

For the most part, these loops are in a horizontal plane but in a number of instances where side clearance was restricted, it was necessary to arrange them vertically. At several locations, the steam line crosses tracks and here, except for the 100 ft. length mentioned above, it is elevated to give the required clearance, the elevated portions being supported by means of H-section posts which, in common with the pipe posts, are embedded at their lower ends in concrete pedestals.

Compressed air requirements for the yard are now furnished by a number of motor-driven, automatically-controlled compressors which are situated at scattered points. In addition to the two units in the machine shop, these include a unit in the passenger station, one in the coach yard building for serving that yard, another at Herr street, which is housed in a small galvanized iron building, and a fourth at Paxton street sub-station.

With W. D. Wiggins, chief engineer of the Pennsylvania System, exercising general supervision over the project, the new terminal at Harrisburg was designed and constructed under the direction of E. B. Temple, chief engineer of the Eastern region, assisted by R. G. Bennett, general superintendent of motive power of the same region; A. R. Wilson, engineer of bridges and buildings; and F. W. Heckel, Jr., assistant engineer at Harrisburg.

McCloskey & Co., Philadelphia, were the general contractors on the construction of buildings, while the Arundel Corporation, Baltimore, Md., handled the track work, the grading for track changes, and the installation of the water service and drainage systems and of the turntable. The four water tanks were erected by the Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.; the turntable was fabricated by the American Bridge Company, Pittsburgh; the steam line was installed by E. H. Reuss, Jr., Inc., Philadelphia; the coaling station and sanding facilities were built by the Ogle Construction Company, Chicago, and the power director's building was constructed by the Turner Construction Company, Philadelphia. Construction of the various phases of the project was undertaken at different times last year and was completed early this year.

* * *



Photo by William Fox

Ascending Rimutaka Grade of the New Zealand Railways

Definite Gains in Buying—Further Decline in Stocks

REPORTS on railway buying for September and the first nine months of the year disclose the fact that increases in equipment buying previously reported in these columns were accompanied by even larger increases in the purchases of materials and supplies, the expenditures for which are always greater than those made for rolling stock.

The value of orders placed for new equipment in September, totaling approximately \$3,804,000, while small compared with the \$17,435,000 of orders released to manufacturers for new equipment in July, was approximately \$346,000 more than the total for August and raised the purchases of equipment from manufacturers for the third quarter of 1938 to approximately \$24,697,000, which was \$14,790,000 more equipment than was ordered in the previous six months and \$11,882,000 more than was ordered from manufacturers in the third quarter of 1937. October and November orders will increase the equipment totals by approximately \$13,500,000.

Materials purchased from manufacturers in September, including materials for equipment to be built in

000, as compared with \$82,585,000 in the second quarter of 1938.

The foregoing figures do not include fuel, purchases of which amounted to \$22,237,000 in September, which total was \$2,204,000 more than in August and larger than the purchases in any previous month this year.

For the first nine months of the year the purchases

Railway Purchases—Materials and Supplies

	Fuel (000)	Rail New & S.H. (000)	Cross- ties (000)	Other Material (000)	Total (000)	Total less fuel (000)
Jan., 1938	\$21,879	\$1,379	\$3,962	\$26,008	\$53,228	\$31,349
Feb., 1938	20,027	1,947	3,808	21,459	47,241	27,214
Mar., 1938	19,953	2,343	3,975	23,573	49,844	29,891
Apr., 1938	18,413	2,232	3,539	21,268	45,452	27,039
May, 1938	17,113	2,269	3,598	19,932	42,912	25,799
June, 1938	17,334	2,285	3,323	19,557	42,499	25,165
July, 1938	17,189	1,587	3,099	20,053	41,928	24,739
Aug., 1938	18,663	1,570	2,852	23,506	46,591	27,928
Sept., 1938	20,033	1,040	2,921	25,017	49,011	28,978
Sept., 1937	22,237	2,702	5,667	47,038	77,644	55,407
9 Mos., 1938 ..	170,604	16,652	31,077	200,373	418,706	248,102
9 Mos., 1937 ..	210,932	38,628	45,857	468,398	763,815	552,883

Revised to Dec. 2, 1938

Railway Purchases—First 9 Months of Year

	Materials* received from manu- facturers (000)	Equipment ordered from manu- facturers (000)	Total from manu- facturers (000)	Fuel (000)	Total including fuel (000)
1929	\$725,189	\$277,645	\$1,002,834	\$254,911	\$1,257,745
1930	595,559	127,371	722,930	234,441	957,371
1931	372,731	23,943	396,674	182,269	578,943
1932	206,800	2,082	208,882	131,400	340,282
1933	185,720	4,360	190,080	133,390	323,470
1934	319,875	58,058	377,933	154,696	532,629
1935	272,730	24,580	297,310	171,820	469,130
1936	395,947	109,162	505,109	189,649	694,758
1937	552,883	165,439	718,322	210,932	929,254
1938	248,102	39,487	287,589	170,604	458,193

* Includes rail and forest products.
Revised to Dec. 2, 1938

railway shops, totaled approximately \$28,978,000, a gain of \$1,050,000 over August and a gain of \$4,238,000 or 16.5 per cent over July and comprised the largest monthly expenditure for materials from manufacturers since March although the September total was less by 48 per cent than in September, 1937.

The outlay for both materials and equipment from manufacturers in September was approximately \$32,782,000 which, while showing a decline of \$9,393,000 from July on account of the larger volume of equipment ordered in July, showed a gain of \$1,396,000 over August.

Materials on Hand

	Fuel (000)	Rail, New & S.H. (000)	Cross ties (000)	Other Material (000)	Scrap (000)	Total (000)
Jan. 1, 1938	\$30,499	\$30,333	\$59,015	\$255,713	\$9,495	\$385,055
Feb. 1, 1938 ..	31,453	31,820	66,153	245,887	8,075	383,388
Mar. 1, 1938 ...	28,822	32,238	68,558	244,454	7,979	382,051
Apr. 1, 1938 ...	27,847	34,644	73,280	236,512	8,098	380,381
May 1, 1938 ...	25,223	34,076	71,583	235,876	7,336	374,094
June 1, 1938 ...	22,391	33,504	65,020	233,634	9,396	363,945
July 1, 1938 ...	22,568	33,007	63,271	227,136	9,276	355,258
Aug. 1, 1938 ...	20,665	32,238	60,900	222,646	8,944	345,393
Sept. 1, 1938 ...	23,192	30,452	62,935	214,662	6,270	337,511
Oct. 1, 1938 ...	24,088	28,679	60,982	216,348	6,148	336,245
Oct. 1, 1937	28,906	31,870	50,572	264,689	7,757	383,794

Revised to Dec. 2, 1938

Considered on a quarterly basis, the purchases of both materials and equipment from manufacturers in the third quarter of 1938 totaled approximately \$106,343,-

of materials and equipment, exclusive of fuel, from manufacturers totaled approximately \$287,589,000, as compared with \$718,322,000 in the same period of 1937 and \$1,002,834,000 in the same period of 1929. The materials, other than equipment, purchased from manufacturers totaled approximately \$248,102,000, as compared with \$552,883,000 in the first nine months of 1937 and \$725,189,000 in the first nine months of 1929. Equipment ordered from manufacturers in the nine months' period totaled approximately \$39,487,000, as compared with \$165,439,000 in the first nine months of 1937 and \$277,645,000 in the first nine months of 1929. Total purchases of materials, equipment and fuel in the nine months' period came to approximately \$458,193,000, which was a decline of approximately \$471,061,000 or 51 per cent from the corresponding purchases in the first nine months of 1937, a decline of approximately \$236,565,000 or 34 per cent from the corresponding purchases in the first nine months of 1936 and a decline of approximately \$799,552,000 or 64 per cent from the corresponding totals in 1929.

The value of materials and supplies on hand, based on original cost, and including stand-by materials, totaled approximately \$336,245,000 on October 1, which was a decline of \$1,266,000 from September 1, 1938, and a decline of \$47,549,000 or 12 per cent from October 1, 1937. The October 1 inventory showed a decline of approximately \$48,341,000 in the stocks of materials for repair work from a year ago.

* * *

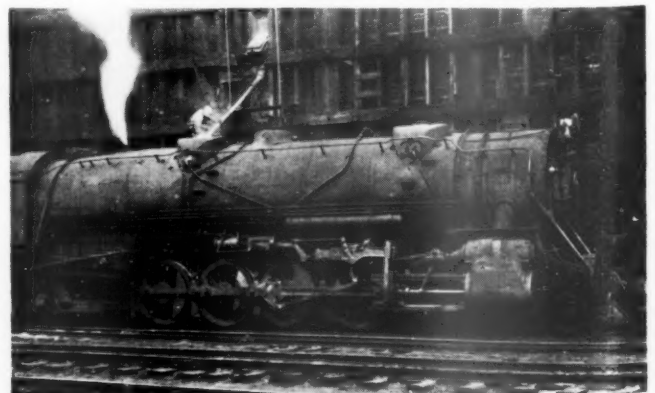
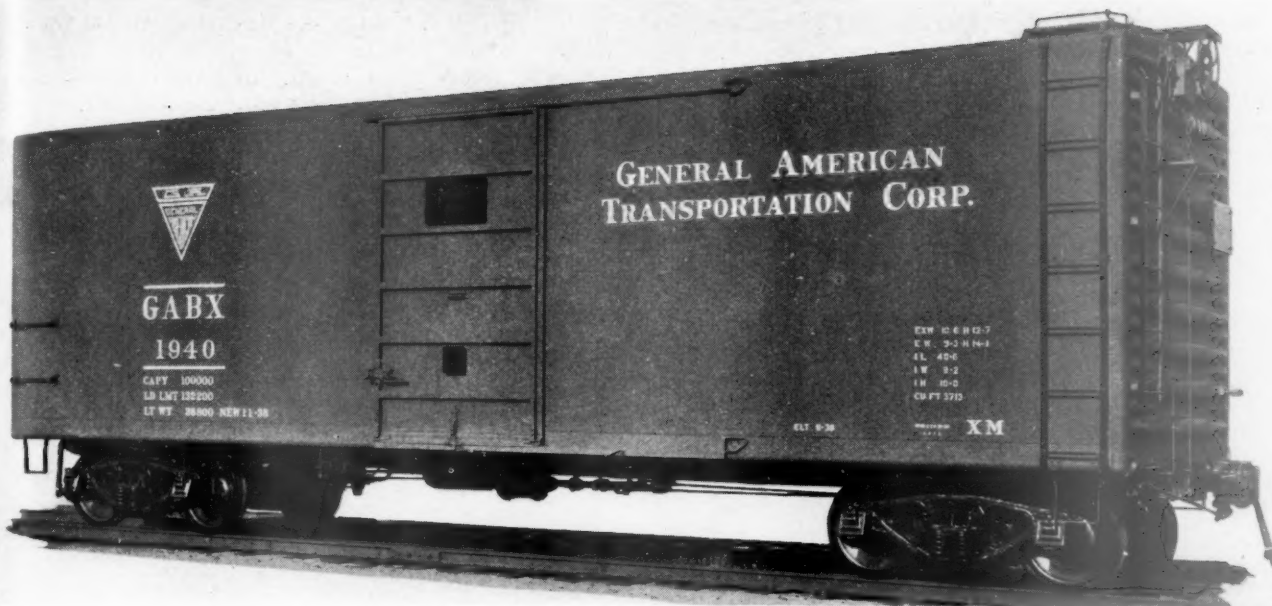


Photo by J. A. V. Hyatt

Getting Ready for Slippery Rails on the Baltimore & Ohio's Brunswick, Md., Engine Terminal



The General American Fusion-Welded 50-Ton Box Car

General American Light-Weight All-Welded Box Car

Unusually flexible modern design is readily adaptable to varying requirements—Continuous automatic fusion welding by new Unionmelt process employed

THE General American Transportation Corporation, Chicago, has recently built the first two units from a new light-weight all-fusion welded 50-ton box-car design, the principal features of which are the use of high-tensile low-alloy steel construction; welding by the new Unionmelt continuous, automatically controlled process developed by the Oxweld Railroad Service Company; and provision in the well balanced engineering design for easily varying minor details to meet the special requirements of individual railroads. The car weighs 36,800 lb. or 8,500 lb. less than the A. A. R. standard car, yet is designed to exceed all A. A. R. strength requirements.

In the GABX box car No. 1940, described in this article, every seam is continuously welded, practically all being done by the Unionmelt automatic machine method. The advantages of this type of welding are said to include a joint that is stronger than the parent plate; no weakening of the area adjacent to the joint; watertightness with no danger of leakage; elimination of corrosion at seams; uniformity of results; and stresses not concentrated but distributed uniformly along the continuous welds.

Weight saving also results from the elimination of laps, flanges and rivet heads. The method of welding employed permits the effective joining of members of any weight or thickness and makes mechanical fusion welding adaptable to any design preferred.

Repairs are eventually inevitable with any method of

construction, but are facilitated in this design because an outside sheet can be removed from the framework. Either side or roof sheets can be replaced, in whole or in part, by hand welding, when necessary. The side and corner posts, as well as all other members, may be removed and replaced as single units.

In order to produce a balanced design each member of the car was carefully analyzed from a stress standpoint to obtain the greatest possible weight saving and to maintain adequate strength. Substantial weight saving results from the use of low-alloy high-tensile steel. Although the minimum yield point of this material is two-thirds greater than ordinary open-hearth steel, an average of only one-third was deducted from the thickness of the material in this design. Accordingly, greater reductions in thickness could be made and yet meet A. A. R. requirements.

Since the section of the girder at the side door is the weakest member of the side assembly, both the side sill and the side plate are reinforced by designing them as box sections beyond the door to the first post at each side. In addition, the side has been reinforced at the door and at the bolster by diagonal corner bracing.

While the builders believe that this all-welded box car is one that will be adapted to the requirements of most roads, the flexibility of design is such that the construction can be varied to meet special needs. For example, the thickness of the side, end and roof sheets, as well as structural members, the spacing of posts and floor string-

ers, and the allocation of specialties can be arranged to suit any conditions.

All floor boards are of one length and can be removed and replaced without disturbing the side lining. The metal grain strip is also used as a floor support and is fabricated as an integral part of the curved-section side sill, simplifying and strengthening the construction at this point. Floor boards of any thickness can be used, a further example of the flexibility of the design of this unit.

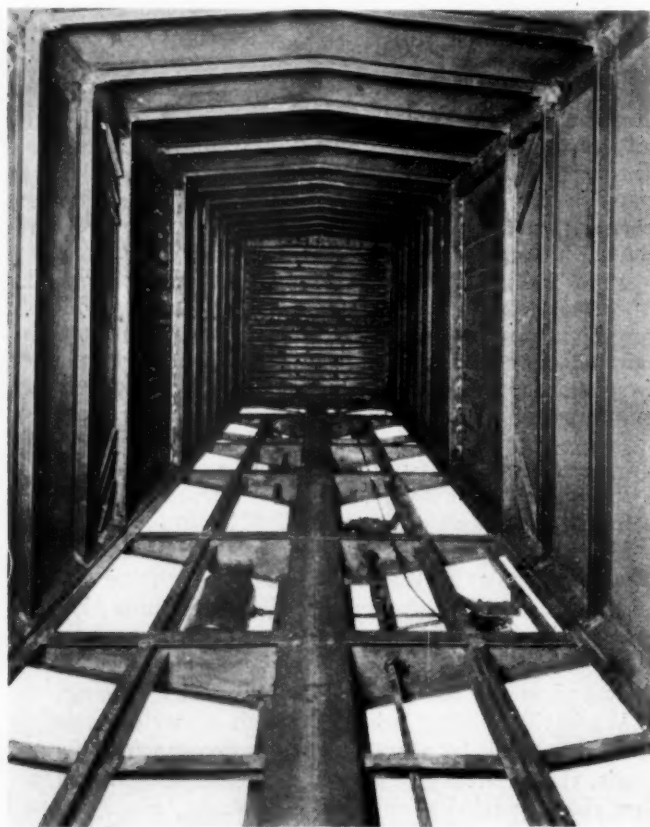
While this car is not ceiled, the roof design permits the easy application of tongue-and-groove boards, plywood sheets or a mastic compound. The ceiling can be applied

Principal Dimensions of General American Light-Weight, All-Steel 50 Ton Box Car

Length over strikers	41 ft. 8 1/4 in.
Length center to center of trucks	30 ft. 8 1/2 in.
Length of body, inside	40 ft. 6 in.
Width of body, inside	9 ft. 2 in.
Width over side sills	9 ft. 9 1/2 in.
Width over side plates	9 ft. 9 1/2 in.
Height from rail to eaves	14 ft. 0 1/2 in.
Height from rail to top of running board	14 ft. 6 1/2 in.
Height of body inside	10 ft.
Side door opening	6 ft.
Cubical capacity	3,713 cu. ft.
Light weight	36,800 lb.
Load limit	132,200 lb.
Ratio of pay load to gross load	78.2 per cent

to conform to the slope of the roof or arranged level with the top of the side lining.

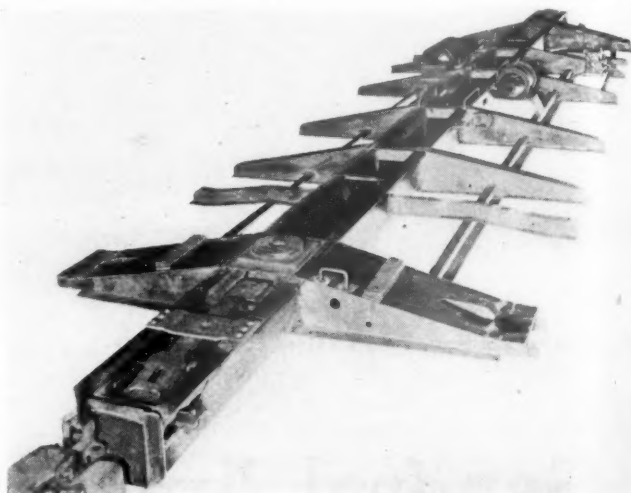
On the exterior of the car, all corners, angles, ledges and projections have been eliminated to enhance the appearance and to remove pockets that might retain cinders and moisture causing ultimate corrosion. The roof is of unit construction using flat sheets butt-welded on the carlines and having no projections or laps at any point. This roof accordingly, contributes materially to the strength of the whole structure. The body corners are rounded, curved sections being used at the side plates, side sills,



Interior of the Car Showing Steel Frame Construction Including Reinforcement at the Door Posts and Built-In Metal Grain Strips

at the top and bottom of the steel ends, and at the corner posts, making possible the incorporation of box sections at these points. The absence of assembly buckles in the sheets is attributed to the use of the Unionmelt process of welding.

Various units of this car are prefabricated in assembly jigs essential for welded construction where precision is required. Sides and roofs are the best example of this type of construction, but a more unusual example is the



Up-Side-Down View of the Fusion-Welded Underframe with Prefabricated Rear Lugs and Center-Plate Unit, Also Front Lugs and Striker, Made of Welded Structural Steel

complete prefabrication in jigs from structural plates and bars of the rear lugs and center brace unit and the front lugs and striker which are assembled by welding structural members, eliminating the need for two castings and saving considerable weight and cost. The unique method used in welding this assembly into an integral part of the sills is said to be entirely new.

The dimensions for the more important parts of the new General American car are as follows: Center sills are A. A. R. standard 31.3-lb. Z-sections of 36,000 lb. per sq. in. minimum yield point C. B. steel; low-alloy high-tensile steel side and roof sheets are .0625 in.; side posts and roof carlines are .10-in. Z-sections; corner posts, 5/32 in.; door posts, 4-in. by 3-in. by 3/16-in. angles; floor stringers, 3-in. by 3/16-in. Z-sections except at the door where 4-in. by 3/16-in. Z-sections are used; side sills, 3/16-in. curved section, combined with 1/8-in. grain strip and floor support; side plates, 1/8-in. curved section; corrugated ends, 3/16-in. bottom and 5/32-in. top sections; bolster diaphragms, 3/16 in. with 21-in. by 5/16-in. top and bottom cover plates; cross-bearer diaphragms, 3/16 in. with 4 3/4-in. by 3/16-in. top and bottom cover plates.

Anderson Spark Eliminator Shows Good Results

AFTER several years of experimenting on the Chicago, Milwaukee, St. Paul & Pacific with various styles of Anderson spark eliminators, also known as arresters, the open-type, shown in one of the illustrations, has been adopted and about 150 of these are now in service in both freight and passenger locomotives on the Milwaukee.

The thirty 4-8-4 heavy combination freight and pas-

senger locomotives, recently delivered by the Baldwin Locomotive Works, also have these spark eliminators and the six 4-6-4 streamlined passenger locomotives, delivered to the Milwaukee this fall by the American Locomotive Company, are equipped with the same device.

Many difficulties were encountered and eventually overcome during the process of development, the main problem being to obtain free-steaming locomotives and yet not throw sparks from the stacks. With ordinary bituminous coal this would be a relatively easy matter, but in the territories where semi-lignite is burned the elimination of sparks is a serious problem. However, the Anderson open-type spark eliminator which was finally developed and adopted is said to be giving highly satisfactory results as evidenced by extensive service tests on the Milwaukee and by a joint report of the state forestry inspectors of Wisconsin and Minnesota



Fig. 1—One of the Earlier Styles of Anderson Spark Eliminator with a Portion of the Front Section Removed

after they had made several observation trips in the cupola of a caboose immediately behind a locomotive equipped with this style of arrester. During these tests, wooden planks and chips were thrown into the firebox, but it is reported that even with such a severe test no sparks came out of the stack.

Other arresters were developed on the Milwaukee besides those illustrated, all of which are fully covered by patents, but those immediately preceding the present open-type arrester are shown in Figs. 1 and 2. That shown in Fig. 1 had both an inner and outer arrester, with numerous vanes for eliminating the sparks. This style was abandoned after the type shown in Fig. 2 was developed due to the expense of manufacture and maintenance, and having to remove it from the front end whenever work was required on the units and flues. As can be seen in Fig. 2, this type of spark eliminator had a door to facilitate work on the nozzle and arrester. This also had to be removed when it became necessary to do any work on units and flues. This style was discontinued after the open-type eliminator with a tapered inside stack, as shown in Fig. 3, was developed.

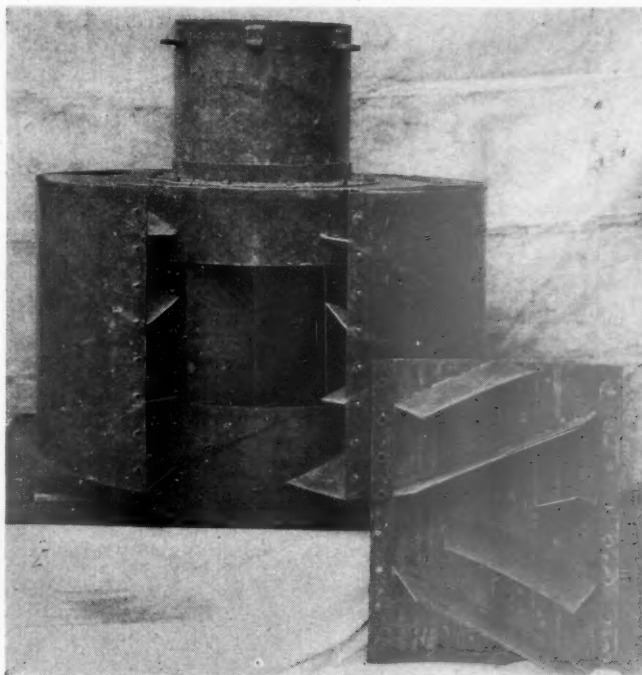


Fig. 2—Anderson Closed-Type Spark Eliminator with Front Section Removed

Referring to Fig. 3, the essential part of the open-type eliminator is the vertical vanes that are set at a specified angle between the top and bottom plates. The surfaces of these vanes break up and eliminate the sparks. The rear portion of the table plate has apertures cut in it by making U-cuts with a torch and by bending downward and forward the metal inside these cuts. The rear edges of these apertures form lips which extend below the table plate and act as scoops
(Continued on page 847)

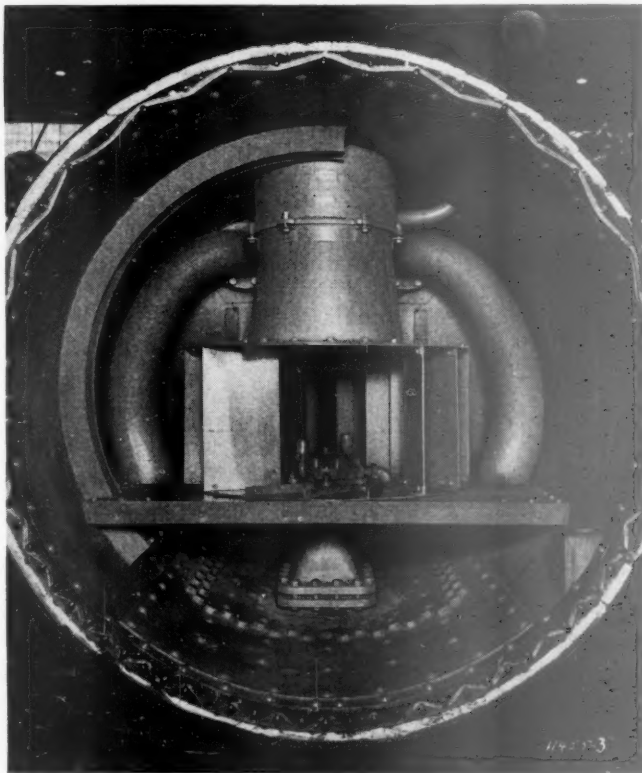


Fig. 3—The Anderson Open-Type Spark Eliminator with Three of the Vanes Removed to Show the Exhaust Nozzle



The Missouri & Arkansas
Saves Money with this
Type of Car

Rail Motor Cars Solve Problems

Missouri & Arkansas units prove economical and attract
business on light traffic line

LIKE other small railroads, the Missouri and Arkansas faced the problem of dwindling passenger revenues and mounting expense of operating steam passenger trains, as poor business conditions and highway competition reduced its traffic to the point where passenger operations were showing losses of about \$5,000 per month. To meet the situation, the M. & A. installed two streamlined, air-conditioned rail cars, built by the American Car & Foundry Company, the technical features of which were described in the *Railway Age* of June 11, page 970. As a result, operating costs have been reduced nearly 50 per cent and passenger traffic has increased about 33 per cent. The units have consistently averaged 2.69 miles per gallon of gas, despite the heavy grades and frequent stops.

A Mountain Railway

The Missouri & Arkansas operates between Joplin, Mo., and Helena, Ark., 368 miles, traversing the Ozark mountains for much of that distance. Except for two small branches of less than two miles each, it consists entirely of main line. It connects at Joplin with the five other railways serving that point and at Neosho, Mo., and two other points in the same state with the St. Louis-San Francisco. From the Arkansas-Missouri state line east, however, the M. & A. has the longest line of any railway east of the Rockies without connection with another railroad. This extends between Seligman, Mo., on the state line, and Searcy, Ark., a distance of 221 miles, almost all of which is through the thinly settled Ozark mountains.

The two rail cars operate daily, one in each direction, between Neosho, Mo., and Kensett, Ark., 267 miles, over the most mountainous section of the railway. To meet the operating conditions, they are powered by Hall-Scott gasoline engines developing 200 h. p., with transmission specially designed to enable them to negotiate the heavy grades. On the west end of the line, between Joplin and Neosho, 19 miles, only freight trains are operated, and passenger service in the relatively flat country on the east end, between Kensett and Helena, 82 miles, is provided by a light rail motor car. Eighty per cent of the total passenger revenues originate in the section over which the new rail cars are operated, although the line between Neosho and Leslie, 171 miles, is closely paralleled by a hard surface highway.

The new rail cars operate on approximately the same schedule as the steam trains they replaced, making the 267 mile run at an overall average speed of 27 m.p.h., a creditable performance considering the mountainous country traversed and the fact that 60 regular and flag stops are made daily, with an average interval of 4.9 miles between stops. This also includes serving the two branch lines enroute, the rail cars each making a round trip over both two-mile branches, to serve Berryville and Eureka Springs. The latter point is a popular summer resort and the new air-conditioned equipment has attracted much additional revenue to this point.

A Typical Month

The new equipment, during a typical month selected for the purpose of comparison, cost 22.99 cents per mile

to operate, including depreciation, as compared with a cost of 41.83 cents per mile for the steam equipment formerly used in this identical service, or a saving in operating costs of 18.84 cents per mile. This results in an average monthly saving in operating costs of \$3,200. Typical figures that go to make up this saving are as follows:

	New Rail Cars	Steam Trains	Increase (I) Decrease (D)
Fuel	\$811.65	\$1,158.35	\$346.70 D
Material—Maintenance	69.60	373.34	303.74 D
Cleaning and Supplying	270.06	142.23	127.83 I ✓
Lubricants	27.18	39.05	11.87 D
Enginehouse expense .....	.....	244.70	244.70 D
Shop and store expense	98.49	246.80	148.31 D
Coal chute man—junction .....	.....	26.97	26.97 D
Fire insurance	23.33	4.35	18.98 I ✓
Turn at Neosho	46.50	46.50	.....
St. LSF trackage	80.91	161.82	80.91 D
Live stock killed	11.00	246.00	235.00 D
Depreciation	387.16	328.43	58.73 I ✓
Pay roll taxes	117.51	177.83	60.32 D

It will be noted that only three small items show increased costs for the rail cars as compared with the steam trains, while large decreases are shown in other cost factors. Maintenance, for example, accounts for a saving of nearly \$1,200 per month in labor and materials, or more than \$1,500 per month if the saving in enginehouse expense is added. A saving of over \$200 per month is also made from a totally unexpected source—fewer heads of live stock killed. Under the Arkansas law, live stock is permitted to wander practically at will over railways and highways, and the ability of the rail cars to stop quicker is the reason for the saving in this item.

Attracting Traffic

The two rail cars are practically identical. Both are air-conditioned and of attractive appearance inside and out. They are equipped with 30-ft. mail compartments and modern comfortable seats for 33 passengers, divided into white and colored compartments.

The passenger revenue for the district between Neosho and Kensett served by these rail cars amounted to \$1,274 in July, 1937, under steam train operation and increased 33 per cent, or to \$1,692, during July, 1938, the first full month the rail cars were in operation. Since schedules and service remained approximately the same in both periods, and passenger traffic generally declined in 1938 as compared with 1937, this increase can be attributed directly to the added comfort provided by the rail cars.

Anderson Spark Eliminator Shows Good Results

(Continued from page 845)

to admit a considerable amount of the smokebox gases to the rear half of the arrester. This smokebox gas and that portion which passes forward under the table plate causes the entire circumference of the spark eliminator to be used and due to this condition the sparks are mostly extinguished by a straight impact due to their momentum rather than by a continuous circular motion around the inside of the eliminator.

Since the outlet to the stack is at the vertical center line and the flow from all directions is towards this section, there is but little whirling action in the eliminator itself. This fact is borne out by the service secured from the vanes which would tend to be quite

limited if they were set at such an angle as to give a pronounced circular motion to the incoming gases and sparks. In the course of time these vanes wear at the inner edges due to the gas passage area being considerably less here than at the outer circumference, but since all the vanes are made reversible this wear is not an objectionable feature.

The angle of the vanes and their width determine the efficiency of the eliminator. These two items of the design were determined by experiment, but are also controlled to some extent by the size of the smokebox. However, the gas area through the vanes should be more than 100 per cent of the flue area through the front tube sheet. That shown in Fig. 3 is maintained at 128 per cent of the flue area for this particular class of engine and no sparks are being thrown from the stack when bituminous coal is burned. If there were, the only change that would be necessary would be to change the width of the vanes from 14 in. to some greater distance. If the change happened to be from 14 in. to 16 in. the area through the eliminator would be reduced from 128 per cent to 108 per cent of the flue area.

In territories where a semi-lignite coal is being burned the eliminator shown in Fig. 3 is operated with vanes 18 in. wide, thereby reducing the gas area to 78 per cent. This is apparently considerably more than that obtained with netting-type front ends. Although they may be designed to give 200 per cent of the flue area, the frictional resistance that the gases have to overcome to get through the netting is high and due to their construction, large sections of the netting are not used. Moreover, the sections through which the gases pass are often half plugged with cinders that have wedged themselves into the open spaces. There also have been many instances when foaming or priming has made the exhaust steam wet and heavy enough to cause the front end netting to become plastered over sufficiently to cause steam failures. An arrester without netting or perforated sheets eliminates this potential source of trouble.

The top plate of the Anderson open-type spark eliminator shown in Fig. 3 is divided at the center line so that one-half at a time can be taken out through the smokebox door or set to one side in the smokebox when necessary to work on the units or flues. This work can also be done by unbolting and removing a few of the vanes when not necessary to remove the top plate to allow a free passage to these parts.

Although a tapered inside stack extension is shown in Fig. 3, a straight cast iron inside stack is also used and is quite satisfactory when round nozzles are employed. This style extends into the eliminator a few inches and is supported by an integral collar on its upper end which fits into a suitable recess in the stack base. It can be easily taken out by removing the main stack and pulling the extension up through the stack base. The tapered inside stack is bolted in place. A metal spacer ring rests between the top of the eliminator and the extension flange on the bottom of this style inside stack and since this ring is about $\frac{1}{8}$ in. thicker than the telescopic joint at the top, the stack extension drops down sufficiently to clear the main stack when the ring is removed. In this way, this style of inside stack extension can be removed and passed through the smokebox door without removing any part of the eliminator.

This spark eliminator is being used successfully with prong, choke-bore, plain-bore and annular-ported nozzles. It has also brought about the general use of increased nozzle areas and larger stacks. In some instances the stack areas are said to have been increased 49 per cent and the nozzle area 30 per cent. This increase in nozzle area is for the same style of nozzle, but when the annular-

ported nozzle was substituted, as happened in many instances, the increase was greater than 30 per cent.

Although the application of the Anderson open-type spark eliminator has made a considerable improvement in locomotive performance, the primary effort back of all the experimental work was to reduce the amount of money spent in settling fire claims and fire-loss damages to both railroad and privately owned property. The results obtained in this respect have been highly gratifying. It is reported that, on one division alone, with 535 miles of main line on which the only coal burned is a semi-lignite, the average loss due to fires caused by locomotive sparks was approximately \$22,000 per year over about a 10-year period. During the 4-year period that the present spark eliminator has been used through this same territory no money has been spent to settle fire claims.

N. Y. Railroad Club Has Speeches in Print

NEW York Railroad Club members again this year (as for the past two) got their oratory in connection with their annual dinner (Thursday night at the Hotel Commodore) in printed form. Eighteen national leaders in transportation, industry, labor, research and finance contributed to the pamphlet symposium, which was entitled "The Situation of the Railroads as Viewed by Some Prominent Americans."

H. A. Enochs, chief of personnel of the Pennsylvania, gave the club members a message on employee-management relations, declaring that out of the recent negotiations between management and labor and recent discussions by government and shipping groups should come "a fruitful solution" for the railways' difficulties. George Harrison, chairman of the Railway Labor Executives Association, urged "co-operation between the government, owners, managements and labor" and expressed the belief that "Congress will shortly furnish to the country a sound national transportation program."

William C. Dickerman, president of the American Locomotive Company, outlined some of the many improvements which have been made in locomotive design and discussed the use of Diesel locomotives—asserting that the locomotive "tools" are available to enable the railroads to "go places," if they are allowed to earn adequate revenues. D. A. Crawford, president of the Pullman Company, cited the more than 70 "super" trains the railroads are operating as only a sample of the kind of service they would give the American public, if they had the necessary funds.

Dr. Virgil Jordan, president of the National Industrial Conference Board, predicted that government ownership of railroads would come "only as a part of a deliberate political program of government ownership and management of the entire American business system"—and he outlined the economic conditions necessary to maintain private ownership. The viewpoint of investors was expressed by Philip A. Benson, president of the American Bankers' Association, and Thomas I. Parkinson, president, Equitable Life Assurance Society.

Edward G. Budd, the manufacturer of stainless steel equipment, drew attention to the fact that "the railroads have leveled the continent" (220,000 miles of railroad line being practically level)—and gave some of the implications of this level on the provision of economical transportation. The preparations of the Eastern railroads for their exhibits at the New York World's Fair

next year were outlined by President J. M. Davis of the Lackawanna (chairman of the Eastern Railroads' World's Fair Committee).

Shippers viewpoints on railroad problems were presented by Thomas H. McInnerney, president, National Dairy Products Corporation; R. M. Weyerhaeuser, president, Northern Lumber Company; and John D. Battle, executive secretary of the National Coal Association—and foreign trade aspects of transportation were outlined by Roger D. Lapham, chairman, American-Hawaiian Steamship Company. Colonel William F. Sharp wrote on the subject of railroads' relation to national defense.

J. J. Pelley, president, Association of American Railroads, contributed a statement on the railroads' program to establish fair conditions for the railroads; and a viewpoint on railroad operations with special reference to the three territories was given, for the Western lines, by Carl R. Gray, vice-chairman of the Union Pacific, for the Southern lines by E. E. Norris, president of the Southern, and for the Eastern lines by F. E. Williamson, president of the New York Central.

New Book . . .

Competition in Transportation, a dissertation, by Richard Hadly Waters. 204 pages. 9 1/4 in. by 6 1/4 in. Bound in paper. Published by the University of Pennsylvania, Philadelphia, Pa.

This book, which starts out as an analysis of competition as it obtains in the transportation business, later bursts the limitations of title and digs into the related subjects of regulation and co-ordination. This extension is made necessary not by any desire to "pad" a Ph.D. dissertation, but rather by pressure of the author's opinion that unmitigated competition is, generally speaking, undesirable, and that transport agencies stand in need of regulatory bodies and self-imposed or government-imposed co-ordination.

Commencing with the present plight of the railroads as a focus point, Mr. Waters traces the efforts of the government to attack the problems of excessive competition by such measures as the Emergency Railroad Transportation Act of 1933; he then delves into the history of railroad-versus-everything-else competition from the canal era on. Finally, he investigates the situation today, supplementing his text with diagrams and graphs, exhausting every possible statistical key to the relative standing of the various transportation agencies.

With Chapter V he comes to the core of his work,—a detailed exhaustive analysis of the economics of transport competition, in which he carefully classifies the modes of competition and lays down some distinctions that have long been lacking in text books on the subject. It is his conclusion that, because of differences in capital investment required and governmental aid, there can be no true competition between such agencies as the railroad and highway operator. Further, in his opinion, "ultimately excessive competition means high cost transportation." Following chapters show the relation of competition to regulatory principles and co-ordination measures.

In the last two chapters, the author leaves analysis proper to set up a group of ten possible "transportation plans," dealing with the placement of railroad, water, highway and air transportation in the national transportation picture. These plans he places under three main heads—(1) competition maintained and encouraged; (2) competition restricted and regulated; and (3) competition replaced by monopoly. Under these heads he exhausts the possible combinations—regulation limited to railroads, uniform regulation of all agencies, horizontal monopolies, regional consolidations, etc. Each plan is demonstrated visibly by ingenious pen sketches which picture each agency by its appropriate vehicle and carry such symbols as heavy squares for complete regulation, light squares for partial regulation, dotted lines to trace competitive influences and panels to indicate monopolies. A discussion of each plan is included.

NEWS

People Better Off When R.R.'s Quit

Such is contention of truck propaganda bureau in 80-page "study"

"All-weather highways and improved motor vehicles supply all the transportation needs of communities throughout the country which have lost rail service, and their presence is a direct aid to railroads in obtaining authority to abandon unprofitable lines," according to a propaganda pamphlet issued by the National Highway Users Conference from "field investigations in ten widely scattered areas." The pamphlet was made available to the public on December 5. It contains 80 pages and is entitled "The Highway, the Motor Vehicle and the Community," and must have cost the truck manufacturers and other "silent partners" of the Highway Users Conference a considerable piece of change.

In all, 11 "studies" were made in 10 states: Arkansas, California, Colorado, Nebraska, North Carolina, Oregon, Tennessee, Utah, Vermont and West Virginia. They were of areas where rail service had been discontinued, with the exception of one in Utah which has never had a railroad. "Great care," says the N. H. U. C. press release, "was taken in their selection, not only to insure a geographical spread but also to develop the various representative types of local industrial conditions affected by such abandonments. The studies include communities devoted to agriculture, mining, lumbering and manufacturing as well as localities of general traffic."

"Facts developed in the separate studies," the Conference says, in a leap to large generalizations from tiny particulars, "lead to the following uniform conclusions:

"1. Because of family cars, trucks and buses, rubber tires and good roads, towns without railroads are no longer at a transportation disadvantage. [Ed. Note—We suggest that the Highway Conference try to peddle this "fact" in the vicinity of Rutland, Vt.]

"2. If a community has a hard-surfaced highway, it is not injured by the abandonment of a short-line or branch-line railroad.

"3. After highway transportation supplants a railroad it: (a) Employs more people; (b) pays more total taxes; (c) offers more flexible, convenient and frequent service; (d) provides faster transportation; and (e) continues and accelerates social developments. [Ed. Note—Even more employment would be provided

if transportation were diverted to wheelbarrows. Also, be it noted, total taxes paid by truckers don't pay teachers' wages—it is only net taxes that do that. Railroad taxes are all net, and truck taxes are not net at all.]

"4. Due to changed methods of production, marketing and shipping, the railroad would not be used much if it were restored to such communities as those studied."

In 20 years, the statement continues, the Interstate Commerce Commission has authorized 1,350 rail abandonments, involving approximately 22,000 miles. Of these, 118 applications, involving 1,919 miles, were approved in the year ended October 31, 1938. "A considerable number of the abandonments," it adds, "were of special-purpose lines, such as those serving a mine or lumber camp, the purpose for which no longer exists. A few others were of lines built into new territory in anticipation of business that never developed. Many, however, were once profitable general-purpose lines which ceased to be profitable to the railroad or indispensable to the life of the community."

The Conference expresses the belief that its "study" of abandonments developed information which "will be helpful in assisting the average citizen, as well as the technician, to understand the entire transportation problem of the nation."

Oral Argument on Warehousing at New York

The Interstate Commerce Commission has set January 5, 1939, as the date for oral argument at Washington, D. C., on the reopened proceeding in connection with warehousing and storage of property by carriers at New York—Part VI of the Ex Parte 104 investigation of practices affecting operating revenues and expenses.

Burlington Stockholders Approve Acquisition of Quincy

Acquisition of 105 miles of the Quincy, Omaha & Kansas City between Quincy, Ill., and Milan, Mo., by the Chicago, Burlington & Quincy, was approved by stockholders of the Burlington at a special meeting at Chicago on November 30. The action taken by the stockholders is in accordance with a joint application filed with the Interstate Commerce Commission in October, in which authority was sought to abandon the 144-mile section between Milan and Kansas City, and to permit the Burlington to take over the Milan-Quincy segment for operation as a branch line. This application superseded a previous one whereby the entire 249 miles would be abandoned, as was stated in the *Railway Age* of May 28, page 509.

Calls Exp. Agency R.R.'s "Kept Woman"

Consolidators' lawyer attacks proposed rate changes, while agency defends them

Oral Argument in Ex Parte 126, the Railway Express Agency rate-increase case, was held before the Interstate Commerce Commission on December 1. J. H. Mooers, counsel for the R. E. A., started his argument by saying that his company expected to get an increase of \$5,000,000 on the present business handled and an additional \$5,000,000 from new business. In answer to a question from the bench, Mr. Mooers said that the recent reduction by the Post Office Department of the rate on books and periodicals from eight cents to 1½ cents a pound would seriously affect the express company's revenues. He went on to say that 20 per cent of their third class business consists of books.

Commissioner Rogers wanted to know whether or not the railroads would get more money by hauling freight in less-than-carload lots or letting the express company handle it and receiving a payment from it for hauling the freight. Mr. Mooers thought the carriers would benefit more by letting the express company handle it.

He also told the commission that his company expected to get added revenue from the small package business because of the fact that the lower rates would eliminate the package consolidator who operates on a large scale in New York City. The commission was also informed that the express company expected to lose some business in the heavier package range because of the increased rates on that class.

Morris L. Ernst, representing the National New York Packing & Shipping Company and other package consolidators in New York City, urged the commission to deny the rate changes, and accused the express company of losing annually the amount of its capital investment. He also charged that some railroads had instituted fast freight service and pick-up and delivery service to kill the express company. Mr. Ernst went on to explain that at the time of the formation of R. E. A. those roads which had been carrying the bulk of the express business between certain points, were given the privilege of continuing to do so. As a result, he said, certain roads like the Pennsylvania, which had carried little express business between New York and Washington, still do lit-

(Continued on page 856)

Truck Operators Ask 12-Hour Day

Also want I.C.C. to allow them
to employ drivers 120 hours
in a two-week period

Strong opposition to the Interstate Commerce Commission's order of July 26 forcing interstate motor carrier employees to rest eight hours after every 10 hours of driving was voiced by representatives of the motor carrier industry when the commission heard oral argument on December 2 in the reopened motor carrier hours-of-service case (Ex Parte No. MC-2). At the same time the commission was urged to stand firm in its order by representatives of the American Federation of Labor and the Wisconsin Public Service Commission. The commission had postponed from October 1 to December 31 the effective date of its order in the case insofar as it applies to common and contract truckers and the effective date of Rule 5, requiring the maintenance of a driver's log, insofar as it applies to common and contract bus operators.

J. Ninian Beall, general counsel of the American Trucking Associations, Inc., led off for the trucking interests, by telling the commission at the outset of his argument that the issues in the case were: (1) Will the 10-hour rule promote or defeat safety? and (2) are the present proposed rules reasonable or unreasonable? Underlying these inquiries, he said, is the proposition that the proposed rules fail to distinguish between hours for work and hours for safety.

Before launching into his one-and-one-quarter hour argument, Mr. Beall stated what his groups felt to be "sound and reasonable" and justified by the record and meeting the requirements of both safety and economics. These were: Twelve hours of driving instead of 10 hours; 120 hours on duty in a two-week period instead of 60 hours in a one-week period; elimination of the log in connection with local cartage work; elimination of the so-called 20-minute rule providing that stops of 20 minutes or less cannot be deducted from driving time; and the redefining of work to avoid the inclusion of responsibility time in daily working time.

Mr. Beall contended that the 10-hour rule lacked flexibility and did not take into account changed highway conditions such as weather, the condition of the road and the number of cars and trucks on it at a given time. "To be required to maintain an average speed," he said, "to prevent being caught out on the highways by a 10-hour rule simply forces disregard of safety precautions."

Discussing the inability of carriers to cover the distances between terminals in the 10-hour period, Mr. Beall declared that "All things considered, the ideal trip, on a 10-hour basis, cannot be made safely in 10 hours more than half the time." At various times during his argument, Commissioners Aitchison, Lee, and McManamy interrupted to ask whether it might be possible that the operators were trying to

cover too much territory and that perhaps they should have their terminals located closer together. At one point Commissioner McManamy wanted to know whether or not Mr. Beall knew that after the passage of the 16-hour law the railroads had to relocate many of their terminals. Mr. Beall admitted that this was the case, but tried to convince the commission that to force such action on the trucking industry would be tantamount to inviting bankruptcy for it in view of the fact that it was now making only a two per cent return on its investment.

Mr. Beall said that his industry did not object to paying for extra hours in bad weather or under adverse conditions, but to limit the driving time to 10 hours meant that in many cases the operators would be forced to pay for an extra day. He then went on to tell the commission that "When there is no rule requiring the operators to establish terminals and put themselves out of business through losses in operating ex-

(Continued on page 857)

Net for September Was \$6,276,573

Brought cumulative deficit
down from \$183,364,495
to \$176,754,588

Class I railroads, excluding switching and terminal companies, reported a net income, after fixed charges and other deductions, of \$6,276,573 for September as compared with \$16,110,527 for September, 1937, according to the Interstate Commerce Commission's monthly compilation of selected income and balance sheet items. The net deficit for this year's first nine months was \$176,754,588 as compared with the eight-months figure of \$183,364,495 and the net income of \$81,442,456 reported for the first nine months of 1927.

Sixty-three roads reported net incomes for September, and 70 reported deficits; in

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 136 Reports (Form IBS) Representing 141 Steam Railways
(Switching and Terminal Companies Not Included)

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of September		For the nine months of	
1938	1937	1938	1937
Income Items			
1. Net railway operating income	\$50,362,457	\$205,074,353	\$470,829,502
2. Other income	11,289,161	102,687,850	107,968,076
3. Total income	61,651,618	307,762,203	578,797,578
4. Miscellaneous deductions from income	1,976,698	18,014,288	15,152,090
5. Income available for fixed charges	59,674,920	289,747,915	563,645,488
6. Fixed charges:			
6-01. Rent for leased roads and equipment	12,620,106	98,818,236	113,252,253
6-02. Interest deductions	39,546,475	† 356,650,319	† 357,740,318
6-03. Other deductions	219,192	1,918,088	2,053,101
6-04. Total fixed charges	52,385,773	457,386,643	473,045,672
7. Income after fixed charges	7,289,147	* 167,638,728	90,599,816
8. Contingent charges	1,012,574	9,115,860	9,157,360
9. Net income	6,276,573	* 176,754,588	81,442,456
10. Depreciation (Way and structures, and Equipment)	16,858,614	151,599,049	146,884,342
11. Federal income taxes	1,893,802	10,782,319	28,711,657
12. Dividend appropriations:			
12-01. On common stock	1,142,445	40,152,579	80,225,301
12-02. On preferred stock	464,325	9,630,708	14,402,099
Balance at end of September			
1938			
1937			
Selected Asset Items			
13. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)		\$653,241,394	\$697,130,346
14. Cash		409,353,412	448,660,657
15. Demand loans and deposits		9,824,587	16,975,622
16. Time drafts and deposits		18,522,021	40,782,230
17. Special deposits		61,794,277	142,111,136
18. Loans and bills receivable		1,554,921	10,653,709
19. Traffic and car-service balances receivable		53,412,311	60,064,079
20. Net balance receivable from agents and conductors		47,920,206	54,891,319
21. Miscellaneous accounts receivable		126,939,669	141,666,350
22. Materials and supplies		329,887,139	383,794,201
23. Interest and dividends receivable		21,062,616	24,844,808
24. Rents receivable		1,520,528	2,193,446
25. Other current assets		6,515,426	8,762,789
26. Total current assets (items 14 to 25)		\$1,088,307,113	\$1,335,400,346
Selected Liability Items			
27. Funded debt maturing within 6 months†		\$78,372,088	\$72,395,716
28. Loans and bills payable §		\$242,689,641	\$210,501,064
29. Traffic and car-service balances payable		73,482,505	81,151,381
30. Audited accounts and wages payable		219,559,471	258,967,652
31. Miscellaneous accounts payable		70,500,819	102,556,219
32. Interest matured unpaid		788,925,408	633,596,490
33. Dividends matured unpaid		9,278,056	12,988,519
34. Funded debt matured unpaid		628,289,618	476,891,340
35. Unmatured dividends declared		1,188,977	2,379,597
36. Unmatured interest accrued		91,210,531	100,979,989
37. Unmatured rents accrued		30,680,705	32,449,644
38. Other current liabilities		27,536,862	26,082,058
39. Total current liabilities (items 28 to 38)		\$2,183,342,593	\$1,938,543,953
40. Tax liability (Account 771):			
40-01. U. S. Government taxes		\$53,803,726	\$113,907,402
40-02. Other than U. S. Government taxes		169,452,893	158,665,498

* Deficit or other reverse items.

† Represents accruals, including the amount in default.

‡ Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

§ Includes obligations which mature not more than 2 years after date of issue.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE \$25,000,000

(Switching and Terminal Companies Not Included)

Name of railway	Net income after deprec.		Net income before deprec.	
	For the nine months of		For the nine months of	
	1938	1937	1938	1937
Alton R. R.	\$1,423,762	\$711,430	\$1,175,300	\$444,696
Atchison, Topeka & Santa Fe Ry. System †	3,252,504	6,040,192	12,231,997	14,594,321
Atlantic Coast Line R. R.	1,451,385	2,403,067	109,985	3,921,577
Baltimore & Ohio R. R.	12,543,443	483,135	7,061,317	5,902,577
Boston & Maine R. R.	3,569,093	355,461	2,359,542	1,563,505
Central of Georgia Ry. †	2,444,016	1,495,758	1,803,596	901,808
Central R. R. of New Jersey	2,991,153	1,186,246	1,930,083	111,542
Chesapeake & Ohio Ry.	12,859,289	25,220,947	19,082,782	31,411,966
Chicago & Eastern Illinois Ry. †	1,504,631	641,764	1,050,501	182,260
Chicago & North Western Ry. †	13,455,448	12,352,070	9,656,275	8,609,331
Chicago, Burlington & Quincy R. R.	399,966	2,310,049	4,209,993	5,934,166
Chicago Great Western R. R. †	1,320,611	887,345	917,230	488,247
Chicago, Milwaukee, St. Paul & Pacific R. R. †	15,466,684	10,277,383	11,164,081	6,188,175
Chicago, Rock Island & Pacific Ry. †	9,941,239	7,612,965	6,828,570	4,560,239
Chicago, St. Paul, Minneapolis & Omaha Ry.	2,192,225	2,199,049	1,751,625	1,754,033
Delaware & Hudson R. R.	996,305	560,388	211,541	233,281
Delaware, Lackawanna & Western R. R.	3,652,194	367,048	1,800,369	1,518,453
Denver & Rio Grande Western R. R. †	5,458,585	4,998,116	4,562,157	4,133,948
Elgin, Joliet & Eastern Ry.	479,094	1,608,022	271,915	2,283,390
Erie R. R. (including Chicago & Erie R. R.) †	9,784,911	1,121,253	6,979,361	3,979,072
Grand Trunk Western R. R.	4,583,998	525,439	3,740,231	255,861
Great Northern Ry.	2,568,770	6,955,666	221,676	9,682,471
Illinois Central R. R.	1,352,668	1,350,398	3,518,000	3,321,519
Lehigh Valley R. R.	3,224,004	997,715	1,599,319	690,854
Long Island R. R.	1,463,865	1,451,932	581,556	575,174
Louisville & Nashville R. R.	619,252	5,717,803	3,866,440	8,843,829
Minneapolis, St. Paul & Sault Ste. Marie Ry. †	5,176,570	3,992,632	4,254,817	3,108,427
Missouri-Kansas-Texas Lines	3,082,167	770,282	2,086,888	119,911
Missouri Pacific R. R. †	12,114,494	5,657,880	8,831,988	2,514,220
New York Central R. R. †	21,433,123	7,235,793	9,359,595	19,274,242
New York, Chicago & St. Louis R. R.	1,848,943	2,009,029	572,964	3,237,545
New York, New Haven & Hartford R. R. †	11,327,076	4,635,141	8,773,540	2,097,526
Norfolk & Western Ry.	11,459,233	23,850,353	15,201,256	27,446,529
Northern Pacific Ry.	7,125,066	2,081,662	4,577,576	343,829
Pennsylvania R. R.	2,098,033	24,448,020	21,175,366	43,143,542
Pere Marquette Ry.	2,713,557	1,372,572	913,442	3,288,608
Pittsburgh & Lake Erie R. R.	909,443	3,706,205	2,592,924	5,098,086
Reading Co.	1,178,974	5,427,724	3,533,431	7,751,110
St. Louis-San Francisco Ry. †	9,533,111	4,854,474	7,188,634	2,492,650
St. Louis Southwestern Lines †	1,299,223	745,454	833,247	295,629
Seaboard Air Line Ry. †	6,150,053	3,574,473	4,618,802	2,112,071
Southern Ry.	3,332,890	1,196,547	1,043,407	3,541,228
Southern Pacific Transportation System †	9,293,444	1,524,380	3,090,044	7,566,198
Texas & Pacific Ry.	504,508	1,709,280	1,401,403	2,578,156
Union Pacific R. R. (including leased lines)	8,746,408	8,982,521	14,229,333	14,057,793
Wabash Ry. †	5,549,828	2,158,865	3,935,925	551,516
Yazoo & Mississippi Valley R. R.	144,876	618,392	258,140	988,156

* Deficit.

† Report of receiver or receivers.

‡ Report of trustee or trustees.

§ Under trusteeship, Erie R. R. only.

¶ Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry., and Panhandle & Santa Fe Ry.

⌘ Includes Boston & Albany, lessor to New York Central R. R.

⌘ Includes Southern Pacific Company, Texas & New Orleans R. R., and leased lines. The report contains the following information: "Income reported hereon excludes offsetting debits and credits for rent for leased roads and equipment and bond interest, between companies included herein. Interest on bonds of, and rental income from, separately operated solely controlled affiliated companies, whether earned or not, are included in this statement, in order that such income credits will offset income debits reflected in the net deficit of such companies. Operations of all separately operated solely controlled affiliated companies resulted in a net deficit of \$4,991,216 for the nine months ended September 30, 1938 and \$2,579,473 for the nine months ended September 30, 1937 which is not reflected in this statement."

September, 1937, there were 68 with net incomes and 65 with deficits. Only 37 roads reported net incomes for this year's first nine months, as compared with 71 in the same period of 1937. The consolidated statement and that showing the net income of roads having operating revenues above \$25,000,000 are given in the accompanying tables.

N. E. Shippers Board Predict Two Per Cent Loadings Increase

Commodity carloadings throughout New England during the first three months of 1939 will be approximately 2 per cent greater than the actual shipments handled for the corresponding period of 1938, according to preliminary estimates presented at a meeting of the New England Shippers Advisory Board in Boston, Mass., on December 8. Reports from the various industrial groups anticipate that 110,974 carloads will be moved during the first quarter of the coming year, compared with 108,764 carloads actually handled during the same period of 1938.

This was the first increase noted in an-

ticipated carloadings in the New England district since the last quarter of 1937. Of the 42 commodity committees reporting to the Board, 29 predicted increases for the first quarter of 1939 ranging from 5 to 45 per cent over the same period of 1938. Only six committees anticipated a decrease in tonnage from last year, while the remainder indicated virtually no change in the picture. The largest decreases anticipated were 20 per cent in potato loadings and 30 per cent in scrap metals.

Municipal Bridge at St. Louis to Be Completed

Completion of the Municipal Bridge at St. Louis, Mo., has been made possible by the government's approval of a non-federal P. W. A. project. The present plans propose the completion of an existing interlocking and automatic signaling system on the bridge and its approaches. At Eighth and Gratiot streets, unfinished work will be completed to make proper connections for the use of the Terminal Railroad Association. The eastern track of the southern approach will be relaid

with new rails and reconditioned generally. The southern approach will be cleaned and painted. The bridge, when completed, will make unnecessary the operation of trains through the tunnel.

Twenty-Five Killed in Bus Accident

Twenty-four school children and a bus driver enroute to high school were killed at Midvale, Utah, ten miles south of Salt Lake City, on December 1, when the bus in which they were riding was driven in front of the "Flying Ute," a fast freight train of the Denver & Rio Grande Western. The accident occurred at a rural crossing during a snow storm, and it is believed that the driver failed to see the train. The driver stopped the bus near the crossing in accordance with Utah law, and then proceeded. The vehicle was directly on the tracks when the train struck it.

Representation of Employees

Carmen (including coach cleaners), helpers and apprentices on the Pittsburgh & Lake Erie and the Lake Erie & Western voted, in a recent election under the supervision of the National Mediation Board, to continue present arrangements whereby they are represented by the American Federation of Railroad Workers. Meanwhile the power house employees and railway shop laborers of the two roads chose the International Brotherhood of Firemen and Oilers, Helpers, Roundhouse and Railway Shop Laborers, which operates through the Railway Employees' Department, American Federation of Labor.

Club Meetings

The Car Department Association of St. Louis will hold its next meeting on December 20 in the Hotel Mayfair, St. Louis, Mo. The program will include a short business meeting and election of officers for 1939, followed by a Christmas party and entertainment.

The next meeting of the Railway Club of Pittsburgh will be held on December 15 in the Fort Pitt hotel, Pittsburgh, Pa. A paper entitled "Flash Butt Welding of Rails" will be presented by Carl W. Loos, Sperry Products, Inc., Hoboken, N. J., illustrated with motion pictures and stereopticon slides. This meeting is scheduled one week earlier than the regular date.

November Employment 1.52 Per Cent Under October

Railway employment decreased 1.52 per cent—from 975,625 to 960,776—during the one-month period from mid-October to mid-November, according to the Interstate Commerce Commission's compilation based on preliminary reports. The November total was also 9.37 per cent under that for the same month last year, while the index number, based on the 1923-1925 average as 100 and corrected for seasonal variation, stood at 53.4 as compared with 53.1 in October and 58.9 in November, 1937.

Decreases under October were reported for three of the employee groups while four showed increases, the drops being enough greater to bring the net decline. Maintenance of way and structures forces were off 8.77 per cent as compared with the

previous month and down 4.49 per cent from November, 1937; transportation employees, other than train, engine and yard, were down 2.11 per cent and 7.8 per cent respectively. The largest of the four increases over October was the 1.87 per cent rise in maintenance of equipment and stores employees, although this group showed the largest drop under November, 1937—14.22 per cent. Train and engine service employees, up 1.24 per cent over October, were 9.11 per cent under November, 1937, while the increase and decrease, respectively, in the number of yardmasters, switchtenders and hostlers was 0.15 per cent and 10.03 per cent.

Illinois Central-Alton Signal Change at Mason City, Ill.

Without prejudice to the right of petitioners to submit a new proposal "providing for adequate protection," the Interstate Commerce Commission, Division 3, has denied the application of the Illinois Central and the Alton for authority to discontinue a mechanical interlocking at Mason City, Ill., and to substitute therefor a crossing gate with color light signals. The report by Commissioner McManamy suggests that the "adequate protection" would be afforded by "a modified proposal which in accordance with standard signal practice will provide a stop indication before reaching the crossing for a train approaching it from either direction on the Alton when the way is not clear for that train to proceed over the crossing."

Exports of Railway Equipment Increase Over Last Year

Exports of railway equipment and supplies from the United States during October were valued at \$1,169,068 compared with \$1,002,501 during September and \$1,266,088 during October, 1937, according to the Transportation Division, Bureau of Foreign and Domestic Commerce, Department of Commerce. The total for the first ten months of this year was \$12,965,073 compared with \$9,439,155 during the corresponding period of 1937.

Locomotives and parts, rolling stock and parts, and miscellaneous equipment, including railway signals, car heating equipment, and air brake equipment were included among the items sold abroad during the year, according to the Commerce Department.

First Red Cap to Be Retired

The first red cap porter in America to be retired on pension is believed to be Robert A. Irvine, a red cap in the LaSalle Street station, Chicago. The retirement of Mr. Irvine follows a recent decision of the Interstate Commerce Commission in ex parte No. 72 in which the Commission ruled that red caps and other station attendants with similar duties in passenger stations and other places on the carriers premises and equipment in cities of over 100,000 population, based on the 1930 census, will hereafter be included within the term employee as used in the fifth paragraph of Section 1 of the Railway Labor Act.

Mr. Irvine was born in Ireland in 1873,

Ickes Pats Self on Back for Dough Spent to Help Air Lines

"Travelers of the nation's skyways will enjoy better airport facilities in 20 cities from New England to California as a result of municipal airport projects aided by P. W. A. funds," Public Works Administrator "Honest Harold" Ickes announced on December 5. P. W. A. has made a total grant of \$7,369,435 toward projects for new hangars, administration and concession buildings, loading and taxi aprons and other improvements to cost \$11,765,641.

Topping the list of grants to the agency of transportation which Uncle Sam has made a prosperous pauper was a grant of \$6,300,000 for the construction of an entirely new airport in Washington that will, when completed, be "one of the finest in the world and will set a standard for future airport construction." Improvements at the municipal airport of Indianapolis, Ind., to cost \$97,000, the P. W. A. statement says, "will not only affect air travelers but will be part of the plan of the Civil Aeronautics Authority and the City of Indianapolis for the development of a large aeronautical testing station for the promotion of safety in air transportation."

"Because of greatly increased air travel in and out of Reading, Pa.," Mr. Ickes continues, "a concession building for the convenience of air passengers will be built with P. W. A. funds and at a cost of \$14,910. A new \$240,000 passenger terminal at the Kansas City, (Mo.) airport will be built to replace the present terminal, which is deemed to be obsolete and inadequate for present needs. The last word in construction and design, the new terminal will include waiting rooms, ticket offices, administration offices, air traffic control room, beacon and observation tower."

"In line with general improvements at the municipal airport at Houston, Texas, a project has been approved for a new administration building, hangar, loading platforms and landscaping—to cost \$250,000. Thus P. W. A. has had a share in the nation-wide improvement of airports for the comfort of passengers and the safety of air transportation."

and came to America at the age of eight. For 35 years he has been meeting trains in Chicago. The New York Central and the Chicago, Rock Island & Pacific are participating in the pension.

New York's Sixth Avenue "L" Ceases Operation

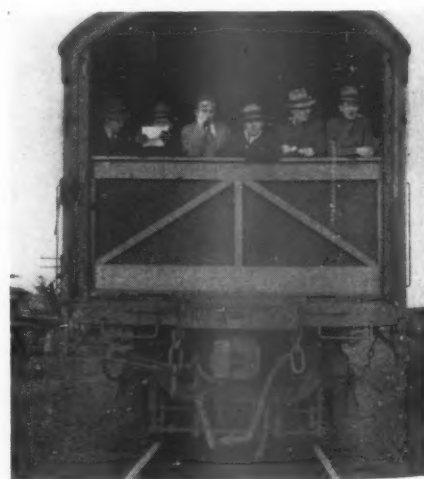
After more than 60 years of continuous operation, the Sixth Avenue elevated railway line of New York, owned by the Manhattan Railway Company and leased by the

Interborough Rapid Transit Company, ran its last scheduled train in each direction on Sunday, December 4, at 11 p. m., and at midnight the city of New York took formal title to the four-mile, two track structure, preparatory to demolition and sale of the physical property for salvage. The second elevated rapid transit railroad in the city, the Sixth Avenue road was opened for regular service in June, 1878. At the time a lengthy editorial appeared in the *Railroad Gazette*, predecessor paper of the *Railway Age*, to comment on the completion of what was then considered a major construction and promotion job. Among other things, the editor emphasized the elegance of the cars, the commodiousness of the "double" stations, the five minute headway and the convenience of the lines' location for the "best people" who, in view of the 10-cent fare, would constitute the major portion of its patrons.

The Sixth Avenue line was operated first by steam "dummy" engines, later by small Forney-type locomotives, and, after the turn of the century, by electricity and multiple-unit motor cars. It is being demolished because it is paralleled by a subway, under construction, and because of the lure of a rise in adjacent property values which demolition of the "el" structure may bring.

Erie Operates its Farewell Tour Over the W. B. & E.

Several new wrinkles in the technique of operating railroad fan excursions were tried out by the Erie when it operated a farewell run on December 4 between New York and Avoca, Pa., via the subsidiary Wilkes-Barre & Eastern, whose abandonment has been recommended by an Interstate Commerce Commission Examiner. To mark the operation of what will probably be the last passenger train over the latter line and, in addition, as a genial gesture to



This Air-Cooled Baggage Car Makes a Fine Vantage Point for Fans on Erie's W. B. & E. Excursion

the railroad enthusiasts, practically every locomotive in the Erie's passenger yard at its Jersey City, N. J., terminal gave a whistle salute to the train as it departed from the station and afforded the 324 passengers aboard an unexpected send-off.

The train also carried at its rear end a large baggage car from which the rear end

had been removed and a waist-high barrier erected so that those who wished to brave exposure might crowd around and have an unobstructed view of the track. In addition the side doors of the car were opened and similar barriers there erected so that additional fans might enjoy the sights, sounds, smells and cinders of open-air railroading without stint.

Car-Over-Cab Operations

Examiner R. W. Snow in a proposed report after further hearing in Ex Parte No. MC-4, has recommended that the Interstate Commerce Commission find that the use by automobile transporters of vehicles so constructed that one of the automobiles being transported protrudes over the cab of the carrying vehicle is not unsafe. Since the commission's safety regulations do not now proscribe vehicles of that type the report merely recommends that there is no need for changing such regulations.

The aim of those petitioning for the reopening of the proceeding appears to have been to get an I. C. C. ruling on the matter which is dealt with in a Pennsylvania statute reading in part as follows: "No person shall operate a vehicle on the highways of this commonwealth carrying any other vehicle, any part of which is above the cab of the carrier vehicle or over the head of the operator of such carrier vehicle."

Gulf, Mobile & Ohio Is Incorporated

The Gulf, Mobile & Ohio has been incorporated at Jackson, Miss., to take over the Gulf, Mobile & Northern and the Mobile & Ohio, which operate in Mississippi, Louisiana, Alabama, Kentucky, Tennessee and Illinois. The company was incorporated in Mississippi owing to the fact that the larger portion of the properties involved are located in that state. At the same time statute recently enacted in Mississippi, authorizes the issuance of no-par stock for the first time. The new company will have 915,598 shares of no par value stock, including 305,750 shares of preferred and 609,848 shares of common stock.

Those listed as officers of the new company are, president, W. B. McCarty of the McCarty Holman Company, Jackson, Miss.; vice-presidents, E. B. Peebles, Mobile, Ohio, and C. McKenzie Lewis, Jr., New York; secretary, Kenneth D. Horton, Mobile; assistant secretary, Warren S. Adams II, New York; and controller, L. W. Swann, Mobile. Directors, all of Jackson, are F. W. Bradshaw, Russ M. Johnson, G. Garland Lyell, Jr., E. E. Laird, W. B. McCarty, George C. Wallace and W. M. Mounger.

D. B. Hanna, First C. N. R. Head, Dies at 80

David Blythe Hanna, who was the first president of the Canadian National, died in Toronto, Ont., on December 1, after a heart attack, at the age of 80. Born on December 20, 1858, at Thornliebank, Scotland, he was educated in the common schools of Scotland and entered railway service in 1874 as a junior clerk and ticket agent of the Glasgow, Barrhead &

Kilmarnock of Scotland. In 1878, he became freight clerk for the Caledonian railway of Scotland. In 1882 he came to the new world and became a clerk in the auditor's office of the Grand Trunk at Montreal, Que., and in 1884, removed for a short time to the United States to take a similar position with the New York, West Shore & Buffalo (now New York Central.)

In 1886 Mr. Hanna returned to Canada as chief accountant of the Manitoba & Northwestern and in 1892 became treasurer of that railroad, assuming in 1893 also the duties of land commissioner. In 1896 he became superintendent of the Canadian Northern and on October 27, 1902, was appointed third vice-president of the Canadian Northern system. On September 6, 1918, upon the formation of the Canadian National by merger of the Canadian Northern, the Intercolonial, the National Transcontinental and the Prince Edward Island roads, he became the system's first president. He retired from railroad service in 1922.

False Statements in Motor-Act Applications

The Interstate Commerce Commission has issued to all motor carriers a notice embodying a warning in connection with the making of false statements in applications for special permission to depart from the requirements of the Motor Carrier Act or the commission's regulations with respect to the publication of rates, fares or charges.

After noting that "occasionally it is found that statements contained in such applications are false," the notice, which is signed by I. C. C. Secretary W. P. Bartel, adds its warning as follows:

"Applicants are warned that false statements made in applications for special permission will result in denial of the request. If it is disclosed that approval of an application has been obtained by false statement, the special permission authority may be revoked and the publication filed thereunder may be rejected. Motor carriers and their agents should also bear in mind that the making of false statements in applications for special permission is a violation of federal laws, including the Motor Carrier Act, 1935, which may subject the person making the false statements to prosecution.

Railroads Refuse Reduction on Citrus Fruits

The railroads have told Secretary of Agriculture Henry A. Wallace that they are unable to make an emergency reduction in freight rates requested to encourage the marketing of this season's large crop of oranges and grapefruit. The position of the railroads was outlined in a letter to the Secretary from A. F. Cleveland, vice-president of the Association of American Railroads.

Briefly, the following reasons were given for refusing to accede to the request: Present financial plight of the nation's carriers; present lower than normal rates on citrus fruits; the fact that a substantial part of the present crop will be purchased

by the Federal Surplus Commodities Corporation at point of origin and that land grant rates will apply, thus reducing the carriers' revenues; information to the effect that the number of citrus trees now coming into production will mean larger crops than this in the near future; fear that reductions in rates on citrus fruits would mean a demand for reductions on other commodities; belief that the "small reduction to the consumer in the usual quantities of purchase would not increase the volume of movement to the extent anticipated;" and lastly, unfairness in reducing the rate on one commodity and giving it a preferential rate over other types of commodities.

Stamp Cachet and Club to Mark Run of New Orange Blossom

Passengers aboard the Seaboard Air Line's east coast Orange Blossom Special on its maiden trip by line-electric and Diesel-electric power from New York to Florida on December 15 will automatically become charter members of the "Orange Blossom Club" and, upon arrival in Miami, Fla., on December 16, will be presented with scrolls engraved with their names and stating that they were the first ever to travel between the north and Florida under electric power. Other features will also mark the ceremonies to be held in Miami when the train arrives. Preliminary details of the Seaboard Air Line's new Diesel-electric locomotives which will haul the train between Washington, D. C., and Miami appeared in the *Railway Age* of November 5, page 673.

The Seaboard Air Line is also sponsoring a special cachet to commemorate introduction of the new service. Stamp collectors throughout the United States and Canada are requested to send their self-addressed and stamped envelopes to the Seaboard's New York office, 12 West 51st street, where they will be rubber stamped with the following description: "First all-electric service between New York and Florida. Seaboard railway's East Coast Orange Blossom Special leaving New York City Thursday, December 15, 1:25 P. M. for Miami, Florida." In addition to the text the cachet will bear a drawing of the train showing one of the new 6,000-hp. Diesel-electric locomotives.

I. C. C. Dismisses Philadelphia Complaint

The Interstate Commerce Commission has dismissed the complaint of Philadelphia, Pa., against the Baltimore & Ohio and other carriers, and has found that class and commodity rates on import, export, coastwise and intercoastal traffic between the Port of Philadelphia and points in Trunk Line, Central, and Western Trunk Line territories are not shown to be unreasonable, unduly prejudicial or otherwise in violation of the Interstate Commerce Act. The commission also found that the charges and practices in connection with accessorial or terminal services at the Port of Philadelphia, as compared with such charges or practices at other north Atlantic ports or at south Atlantic or Gulf ports, are not shown to result in undue

prejudice to the Port of Philadelphia or in undue preference of such other ports. The record, according to the commission, does not warrant the prescription of a tariff rule requiring the accessorial charges to be stated separately from the line haul on import, export, coastwise or intercoastal traffic.

"The differential port rate adjustment at the ports of Boston, New York, Philadelphia, and Baltimore is the outgrowth of a long period of competitive strife," the report's summary says. "The relations between these port rates have stood unchanged for many years and should not be overthrown except upon definite proof that they are unlawful. We have repeatedly refused to disturb them and no evidence has here been presented which would warrant a different course.

"The relation between the Philadelphia rates and the Norfolk rates in some respects might be difficult of justification if the same carriers were responsible for both sets of rates, but this is not the case. For the same reason the relatively lower rates between the south Atlantic and Gulf ports and the western part of central territory than between Philadelphia and the same territory cannot be said to be unlawful. There is no showing that the rates at Norfolk or at the southern ports are unreasonably low. The import rates from the Canadian ports are relatively lower than from Philadelphia but the water competition on the St. Lawrence river and the Great Lakes is a circumstance affecting the traffic from those ports and not encountered at Philadelphia. With respect to Albany we have in a recent case fixed the relation between that port and Philadelphia in the port rate adjustment. No doubt as to the correctness of that decision is raised by the present record. The allegations with respect to terminal charges and practices are unsupported by any evidence in this record."

Commissioners Meyer, McManamy, and Rogers did not participate in the consideration and disposition of the proceeding.

Shippers Oppose Higher Truck Rates in East

Shipper witnesses appearing at hearings in connection with establishment of minimum highway motor carrier rates in the Middle Atlantic states territory, which reopened on December 5 before I. C. C. Examiner Johnston at the Hotel New Yorker, New York, on the whole expressed opposition to the higher level of minimum rates proposed by the Middle Atlantic States Motor Carrier Conference, as presented by D. T. Waring, its tariff publishing agent. While shippers are not united in setting forth suggestions for alternative rate levels and principles for their making, members of a special committee formed in connection with these specific hearings known as the Middle Atlantic States Shippers' Motor Carrier Committee, of which Charles L. Fagg, traffic manager, Newark (N. J.) Chamber of Commerce, is chairman placed on the record certain declarations of policy which have been agreed to generally by the members of the committee.

In the first place these witnesses vigorously opposed any attempt to base motor carrier rates on railroad rate levels, and indicated their support rather of the principle that motor carrier rates and charges should be based upon average motor truck costs under efficient management and economic operation, plus a fair profit. Secondly, they believe that mileage rates should be based on the most direct, usable highway routes. Testifying in connection with the first point, George Seidle, traffic manager of the Armstrong Cork Company, declared that motor carrier rates should not be "frozen" to railroad rates and to back his statement analysed operating statistics of certain large highway operators which reveal a wide variation in costs.

Freight Car Loading

Loading of revenue freight for the week ended November 26, totaled 562,084 cars, a decrease of 95,393 cars or 14.5 per cent below the preceding week due to the ob-

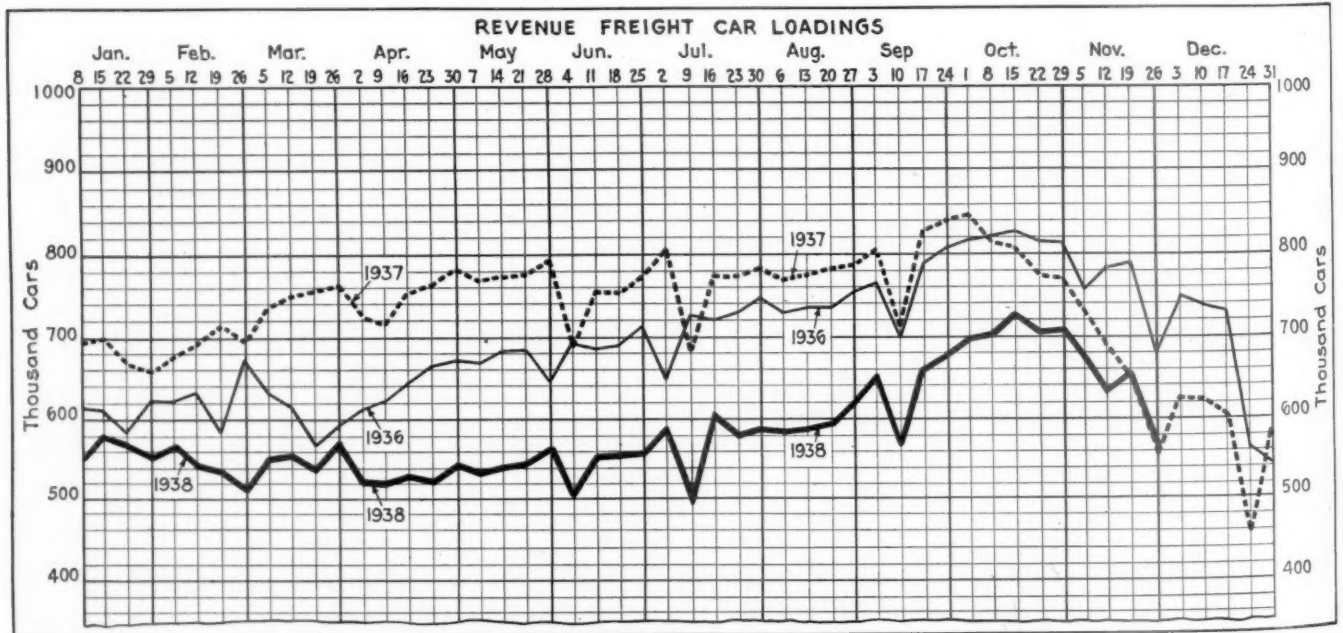
servance of the Thanksgiving holiday, a decrease of 217,668 cars or 27.9 per cent below the same week in 1930, but an increase of 6,322 cars or 1.1 per cent above the corresponding week in 1937. All commodity classifications showed decreases under last week, while all commodity classifications except live stock, forest products and ore showed decreases under last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loadings			
For Week Ended Saturday, November 26			
Districts	1938	1937	1936
Eastern	116,464	116,826	146,042
Allegheny	102,704	102,027	138,517
Pocahontas	41,033	37,590	52,846
Southern	86,011	85,779	102,346
Northwestern ...	69,462	65,965	78,024
Central Western..	100,726	98,492	104,365
Southwestern ...	45,685	49,083	58,160
Total Western District	215,873	213,540	240,549
Total All Roads..	562,084	555,762	680,300
Commodities			
Grain and Grain Products	29,159	32,536	30,984
Live Stock	13,769	12,348	15,945
Coal	120,403	121,438	141,545
Coke	6,758	6,820	11,209
Forest Products..	25,588	24,975	32,581
Ore	12,337	9,356	13,369
Merchandise l.c.l.	129,890	134,536	145,764
Miscellaneous ..	224,180	213,753	278,903
November 26 ..	562,084	555,762	680,300
November 19 ..	657,477	644,927	789,772
November 12 ..	636,710	685,926	784,980
November 5 ...	673,333	728,765	759,615
October 29	708,840	768,024	814,514

Cumulative Total, 47 Weeks 27,519,447 34,917,862 32,751,822

In Canada.—Carloadings for the week ended November 26 were 48,129, compared with 52,660 a year ago and 51,171 in the preceding week, according to the statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Nov. 26, 1938	48,129	20,968
Nov. 19, 1938	51,171	23,026
Nov. 12, 1938	51,120	22,930
Nov. 27, 1937	52,660	22,253
Cumulative Totals for Canada:		
Nov. 26, 1938	2,226,275	972,178
Nov. 27, 1937	2,406,847	1,240,091
Nov. 21, 1936	2,244,626	1,100,214



U. S. Supreme Court Decisions

Three cases affecting transportation interests were decided by the United States Supreme Court at its session on December 5. In one case of *McDonald v. Thompson*, a motor carrier operating exclusively in interstate commerce filed an application with the Interstate Commerce Commission for a certificate of convenience and necessity, under the "grandfather" clause of the Motor Carrier Act of 1935, and brought suit against the Texas Railroad Commission to restrain it from denying him the use of Texas highways because he did not hold a permit under the Texas Motor Carrier Act. The motor carrier operator contended that the state permit requirement, as applied to an interstate carrier, is a violation of the Commerce Clause of the federal Constitution, since the Motor Carrier Act of 1935 is exclusive in the regulation of interstate carriers.

The court, in its opinion, held that one "operating as a common carrier on public highways of a state in defiance of its laws" is not in "bona fide" operation, and, therefore, is not protected by the "grandfather" clause of the Motor Carrier Act of 1935, and declined to rule on the questions of law presented by the carrier.

In another case of *Shields v. Utah Idaho Central Railroad Company*, a suit to enjoin the United States District Attorney from enforcing the provisions of the Railway Labor Act against the Utah Idaho Central, after the Interstate Commerce Commission had determined it not to be within the exemption proviso of Section 1 of the Railway Labor Act, since it is not an interurban electric railway, the court reversed the District Court and sustained the determination of the commission.

In another case of the *State of California v. Latimer et al.*, the court decided that the State of California is not entitled to an injunction to restrain the enforcement against a state-owned and state-operated railroad of provisions of the Federal Railroad Retirement Acts of 1935 and 1937 and of the Federal Carriers Taxing Act of 1937 relating to the payment of taxes and the keeping of records of employees.

C. N. Opens 100-Mile Branch in Quebec Mine Region

Thunders-through of the Official Guide will shortly observe the edition of a sizeable group of station names in Canada by reason of the opening of a new 100.6-mile branch by the Canadian National between Senneterre, on the Northern Transcontinental line, and Noranda in the heart of the rich Bell River-Rouyn gold and copper mining district of northwestern Quebec, on December 3, with appropriate ceremonies held in the presence of C. D. Howe, Canadian minister of transport, and T. A. Crerar, minister of mines and resources. Through coach passenger service on the branch was inaugurated on December 5 on the following schedule: Train No. 237 leaves Senneterre daily except Sunday at 11:50 a. m. following the arrival of train No. 11 with through equipment which had left Montreal and Quebec the previous night, and is scheduled to arrive at Nor-

anda at 4:30 p. m. giving ample time to connect with "The Northland" leaving Noranda daily at 6:10 p. m. for Toronto, Ont. In the opposite direction, train No. 238 leaves Noranda daily except Sunday at 11:15 a. m., arriving at Senneterre at 3:40 p. m. The departure from Noranda follows the earlier arrival there of "The Northland" from Toronto, while the arrival time at Senneterre provides for connection with No. 12 leaving at 4:05 p. m. for Quebec and Montreal.

Since Noranda, the western terminus of the branch, is at the southern end of a branch connecting with the main line of the Canadian National at Taschereau, opening of the Senneterre-Noranda line actually completes a large railroad rectangle having as its northern side the Canadian National main line (the old National Transcontinental, opened for service 1911-1912), as its western side the Taschereau-Noranda branch (opened in 1927) and for its southern and eastern sides the new branch, which heads in a southerly direction from Senneterre to a point near Colombiere, then turns westward to Noranda.

A 37.5-mile segment of the new line from Senneterre to Val d'Or was opened on December 1, 1937 (*Railway Age* for December 4, 1937, page 810) and mixed train service between the two points established on a "twice-daily-except-Sunday" basis. The Canadian Parliament authorized construction of the line on June 23, 1936, and the contract for construction was awarded October 22, 1936.

The new line serves a territory in which there are now 30 active mines and a population of 40,000, which has numerous mines producing gold, copper and other minerals to a total value of \$42,000,000, of which the gold production represents \$30,000,000.

N. J. Carriers Offer to Pay Two-Thirds of State Tax

Representatives of trunk-line railroads operating in New Jersey, in conference with a special committee of state legislators seeking to find a solution to a tax stalemate between the roads and the state

counsel, Lehigh Valley, suggested that taxes for 1939 be levied against New Jersey railroads by applying the following rates to values as assessed in 1938: (1) first class property (main stem right-of-way)—2½ per cent; (2) second class property (other than main stem right-of-way)—local rates up to a maximum of four per cent; (3) third class (tangible personal)—one per cent; (4) fourth class property (franchise)—2½ per cent.

Should these principles be followed in 1939 assessments, the New Jersey carriers would enjoy a 35.46 per cent reduction in taxes as compared with 1938, or \$7,221,484. The following table shows 1938 taxes, as levied, and proposed 1939 taxes, as computed, for each New Jersey trunk line road:

	1938 taxes	1939 taxes	Per cent
C. of N. J.	\$3,788,735	\$2,461,235	64.96
L. V.	1,975,721	1,282,786	64.93
D. L. & W.	3,322,474	2,200,397	66.23
Erie	2,085,371	1,455,408	69.79
N. Y. S. & W.	349,035	223,040	63.90
N. Y. C.	1,193,031	874,916	73.34
P. R. R.	5,390,543	3,390,785	62.90
P. R. S. L.	699,298	403,079	57.64
Reading	581,605	312,285	53.69
Unclassified ...	978,238	538,637	55.06
Total	\$20,364,054	\$13,142,570	64.54

The carriers also offered to pay \$7,524,972 of withheld taxes, so as to bring total payments for 1932 to 1938, inclusive, up to two-thirds of total taxes levied. The Lehigh Valley and Central of New Jersey have contested assessments for 1932 to 1938, inclusive, and the Delaware, Lackawanna & Western, the New York Central and the Erie and subsidiaries, for 1933 to 1938, inclusive, which litigation is still pending, as described in recent issues of *Railway Age*. Of a total of \$80,158,101 taxes levied on these roads during these periods, \$45,913,763 has been paid on account to date, leaving an unpaid balance of \$34,244,348. If, as the carriers suggest, the state settles for two-thirds of total assessments, the contesting roads propose to pay the balance between 66½ per cent of total assessments (\$53,438,735) and their payments to date (\$45,913,763), which is \$7,524,972. Payment would be made in two

Plan for Payment of Back Taxes by New Jersey Railroads

R. R.	Tax as Levied	66½ p.c. of Tax	Paid on Account	Balance (66½ p.c. Less Payments)	Proposed Payment	Deferred Payment
L. V.	\$12,848,697	\$8,565,798	\$7,184,591	\$1,381,207	\$400,000	\$981,207
C. of N. J.	26,884,198	17,922,799	15,210,055	2,712,744	1,378,873	1,333,871
D. L. & W.	19,623,322	13,082,215	11,764,560	1,317,655	1,000,000	317,655
N. Y. C.	6,872,005	4,581,337	3,906,928	674,409	674,409	.....
Erie	11,643,515	7,762,343	6,777,411	984,932	250,000	734,932
N. J. & N. Y.	318,396	212,264	116,536	95,728	.....	95,728
N. Y. S. & W.	1,967,968	1,311,979	953,682	358,297	150,000	208,297
Total	\$80,158,101	\$53,438,735	\$45,913,763	\$7,524,972	\$3,853,282	\$3,671,690

resulting from over six years of complicated litigation in state and federal courts, on December 6 proposed that the carriers settle the matter of unpaid tax assessments for 1932 to 1938 on a two-thirds basis. For the future, the railroad representatives proposed new principles of taxation which would bring the total of 1939 taxes to approximately 64.54 per cent of the amount already levied for 1938.

The carriers' proposal, which was presented to the legislative committee by R. W. Barrett, vice-president and general

parts, \$3,853,282 before February 1, 1939, and \$3,671,690 deferred according to an arrangement to be worked out with the legislative committee. Details of the settlement plan for each of the carriers which have withheld a portion of tax assessments appear in an accompanying table.

Commission Hears Oral Argument In D. & R. G. W. Case

Sharp disagreement over the treatment of their clients in the allocation of new securities but general agreement that this

case is the most difficult and the most complex reorganization case to come before the commission were expressed by counsel when the Interstate Commerce Commission heard oral argument in the Denver and Rio Grande Western reorganization case on December 7. William V. Hodges, representing the debtor company, began the argument, but after about 15 minutes was forced to discontinue it because of illness. Feeling better after a short while, he attended the remainder of the hearing and resumed his argument at the close of the session. Mr. Hodges told the commission that the debtor's plan was fair and just and that it should be adopted in the interest of all security holders of the railroad.

Col. Henry W. Anderson, appearing for the Insurance Group Committee, defended his group's plan but attacked the plans of Interstate Commerce Commission Examiner Jameson and the debtor. He asserted that the debtor's plan is opposed by all the other interests in the case and characterized it as "utterly impracticable" and a "Van Sweringen plan." He called the debtor's plan unjust and illegal and went on to say that his groups will insist on their right of foreclosure if what they regard as a just and equitable plan is not brought out by the commission.

The Missouri Pacific, a half-owner of the common stock of the D. & R. G. W., was represented by H. H. Larimore, who contended that the D. & R. G. W. cannot be operated successfully as a separate road. It was his belief that the MOP should either be allocated a half interest in the new common stock of the debtor or given the opportunity to purchase that amount of stock so that its present connection with the D. & R. G. W. will be maintained. He said that it was absolutely necessary for the MOP to continue to get its present large share of traffic from the D. & R. G. W. at Pueblo, Colo.

Commissioner Mahaffie asked Mr. Larimore why the commission shouldn't let the D. & R. G. W. stand by itself as an independent company and deal separately with the Chicago, Rock Island & Pacific, the Chicago, Burlington & Quincy and the MOP, thus playing one off against the other and getting the best dividends possible. Commissioner Porter was quick to say, "like the Union Pacific does now at Omaha."

Mr. Larimore closed by saying that the position of the MOP is that if the commission decides that it should have half of the common stock of the D. & R. G. W. and it also finds that its present half interest in the road is worthless, that the commission should give the MOP the chance to buy a new half interest in the road at a fair price to be fixed by the commission. To continue in business, Mr. Larimore said, the MOP must have the business of the D. & R. G. W.

Gerald Hughes, representing the U. S. Trust Company of New York City, the trustee of one of the underlying mortgages of the D. & R. G. W., advocated an "independent management" of the road, saying that only in this way could it expect to make a go of it. William Clark Mason, counsel for the Security Research Bureau, told the commission that the Insurance

group plan should be the basis of a new plan for the road.

Representatives of the Wichita, Kans. Chamber of Commerce, the St. Louis Chamber of Commerce, the Hutchison, Kans. Chamber of Commerce, and the Pueblo Chamber of Commerce, appeared in opposition to any plan which will take away the MOP's control of the road and the maintenance of a through route to the west via the Western Pacific.

The Railroad Credit Corporation, through Daniel Willard, Jr., its general counsel, and the Reconstruction Finance Corporation, in the person of Cassius Clay, its railroad counsel, defended the Examiner's plan, saying that they were satisfied with their treatment under it. C. S. Bailey, representing the Utah Public Service Commission, opposed the consolidation of the Denver & Salt Lake Western with the D. & R. G. W. as proposed by the examiner. He also said that interests whose names he could not disclose, would soon ask permission from the commission to build new lines in the Uintah basin country.

R. E. A. Officers See Demonstration of Church Container

Preliminary to the expected inauguration by the Railway Express Agency of a new refrigerated container service for the shipment of perishables in small quantities shortly after the first of the year, Major Elihu Church, president of the Church Freight Service, Inc., demonstrated a container of his design for this service before L. O. Head, president of the Agency and a group of regional vice-presidents from various parts of the country, on December 7, at R. E. A. headquarters in New York. The new container, manufactured by the General Electric Company at its Erie, Pa., works, is about the size of a large trunk, has capacity for about 300 lb. of merchandise and is light enough to be handled easily by express employees at

local stations. The refrigerant used may be either dry ice in the case of frozen fruits and fish requiring below-freezing temperatures or water ice for fresh vegetables or fruits. The purpose of the new service is to widen the distribution area of perishables and to open up markets in smaller communities hitherto not available to shippers of perishables because of their inability to consume shipments in car load lots.

Calls Exp. Agency R.R.'s "Kept Woman"

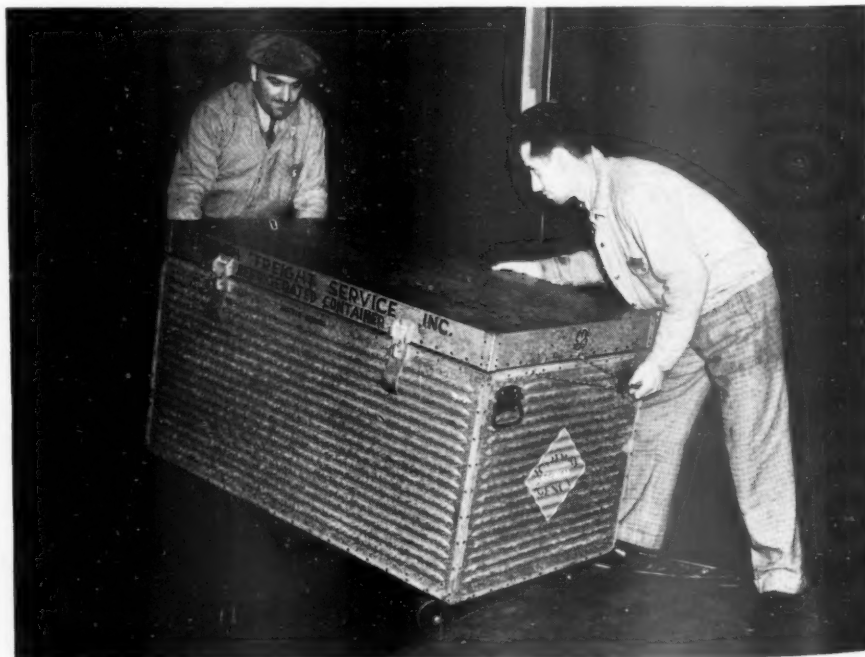
(Continued from page 849)

the express business with the result that they have little interest in the welfare of the express company.

He pointed out to the commission that even if the rates were changed, the express company could hope to get little more business from the packing companies since at present they ship 66 per cent of their business by express. Mr. Ernst characterized the R. E. A. as "a kept woman of the railroads," saying that there was no check on how much money the R. E. A. could lose during a year. He ended his discussion by predicting that the railroads and the R. E. A. would lose money if the commission allows the increases and decreases asked for.

C. E. Cotterill, counsel for the Middle Atlantic States Motor Conference, accused the R. E. A. of trying "to demolish the package companies so that that part of their business now shipped by truck will come back to the express company." In an effort to show how the express company is losing money on certain rates today, he cited cases where the express commodity rate for packages over 1,000 lbs. was 15 per cent less than the rail rate.

P. H. Porter, representing the Wisconsin



Two Express Employees Demonstrate the Ease of Handling the Church Refrigerated Container to be Utilized by Railway Express Agency Early Next Year

Public Service Commission, said that his group was not opposed to a reduction on smaller packages but was against any increase in heavier shipments. C. E. Hochstedler, appearing for the Chicago Association of Commerce and the Indiana State Chamber of Commerce, urged the revision of the small package charge, saying that it was the "most constructive change in recent years."

Emil Schlesinger, attorney for the Garment Center Truck Owners of New York City, told the commission that the consolidators would be forced out of business together with about 1,000 of their employees. He urged the commission to consider the social significance of such an order, and not issue it.

Truck Operators Ask 12-Hour Day

(Continued from page 850)

penses, it takes no clairvoyant to see what is bound to happen. They are going to make the runs in 10 hours. They are going to *hope* to avoid accidents as against the *certainty* of financial ruin if they incur the extra expense." The A. T. A. counsel also said that the problem would be solved by increased speed, some operators already having placed their orders for bigger engines and Diesel equipment which will give them greater speed on hills.

Besides urging that the 60-hour week greatly handicapped the industry and that it should be increased to 120 hours in a two-week period, Mr. Beall asked the commission not to require the log for local cartage work, pointing out that this class of work involves but a few miles and few hours of driving and that the stops are too numerous to enter on the log. He also contended that the 20-minute rule should be abolished, saying that stops of 20 minutes or less represent too much of the time in pick-up and delivery and peddler runs. Other reasons for the abolition of the rule were that it prevented the completion of trips of less than 100 miles in many cases; that it tends to defeat safety in over-the-road operations.

In discussing the definition of work, Mr. Beall said that "Under no circumstances should the daily basis include more than driving and loading." Waiting for passengers, he thought, and ferries and eating should not be included in the daily time even though it might be included in the weekly time. He went on to point out that a strict interpretation of the rule, including waiting for work and responsibility, would prevent the completion of many runs within the prescribed time by cutting down the driving time.

E. S. Brashears, appearing for the Ohio Commercial Haulers and the Household Goods Carriers Association, supported Mr. Beall's contentions in all respects. F. H. Rawlings of the Texas Motor Transport Association, asked the commission to change the rule to 12 hours of driving, saying that in Texas in view of the fact that its principal cities were from 225 to 300 miles apart it was impossible for the truck operators to cover this distance in the 10 hours of driving time. He said that

at present, under the commission's order, no long run in Texas can be made within the 10-hour period. Commissioner McManamy interrupted to ask whether or not he wanted the commission to give a special dispensation to Texas. The attorney answered that he did not. He closed by observing that "this rule will not make the highways safe."

R. G. Hyett, representing the Texas Oil Field Haulers, asked that if the rules were not liberalized, the commission give special attention to his clients, whose problem of hauling oil well equipment was unique in the trucking industry.

E. M. Berol, attorney for the California Motor Truck Association and the trucking interests of the other western states, took the same line of attack as did Mr. Beall. Although he did not contend for special treatment for the western operators, he did say that due to different topography and climatic conditions, it would be impossible, in many cases, for them to still operate and follow the 10-hour rule. In answer to questions from the bench, he said that 24.8 per cent of the operations in the far west would have to be revised if the commission refused to liberalize the 10-hour rule. He also told the commission that it did not

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GOOD NEWS FOR HOLIDAY TRAVELERS!



**Round-Trip
RAIL FARES
REDUCED**

Tickets on sale Dec. 15 to Jan. 1
Good returning till Jan. 10

AS their way of saying "Merry Christmas" the undersigned railroads are glad to announce this reduction.

These holiday fares afford a substantial saving for families as well as individuals going home for the holidays or for vacation.

Good in coaches and Pullman cars between all stations on the railroads named, with certain local exceptions. Also reduced holiday fares to other sections of the United States and Canada. Stopovers at any point, going and returning.

Take advantage of these reduced fares to go the fast, carefree way that gets you there safely, comfortably, regardless of wintry highways and uncertain weather...BY TRAIN!

Consult any railroad ticket agent for fares

BALTIMORE & OHIO • ERIE • LACKAWANNA
LEHIGH VALLEY • NEW JERSEY CENTRAL
NEW YORK CENTRAL • PENNSYLVANIA

Eastern Roads Announce Christmas "Gift Package" of Fare Bargains in Newspaper Notice. Details Appeared in Last Week's *Railway Age*

have adequate scientific data to decide whether 10 or 12 hours is the proper limit for driving time.

Ivan Bowen, appearing for the National Association of Motor Bus Operators, took the position that regulation of hours of service in the bus industry was unnecessary. He also objected to the log, saying that it was merely a duplicate of the information which the drivers are already required by the bus companies to keep. He also thought that the records "for pay purposes" now kept will be more accurate than the log which will be kept for the commission's records.

Urging the commission to stand by its order and not relax it was Joseph A. Padway, general counsel for the American Federation of Labor, who told the commission that he appeared in behalf of the International Brotherhood of Teamsters and the Brotherhood of Machinists. He began his argument by saying that the A. F. of L. was still of the opinion that the commission should have gone into the larger subject of the effects of its order on unemployment in the industry and the social aspects of the case instead of confining its order to maximum hours. In the reopened case he asked the commission to take judicial notice of the 50,000 unemployed truck drivers in the industry.

Mr. Padway made it clear that he was not attacking the commission's 10-hour rule, but he did say that he did not consider it a liberal one at all. The A. F. of L. general counsel also derided certain exhibits of insurance company executives who had testified at the Chicago hearing that the number of accidents decreased as the number of hours of driving increased. He closed his argument by accusing the truck operators of lack of good faith when he said that very few of them had ever attempted to comply with the commission's 10-hour rule so that they could honestly come to the commission and ask for a revision of it on the grounds that it was unworkable and unfair.

O. D. Zimring, appearing for motor coach employees, discussed the keeping of the log and characterized the commission's prescribed log as "simple and intelligible." He said that he did not believe the men would object to filling them out and went on to say that a man with a grade school education could answer the questions set out in it.

P. H. Porter, representing the Wisconsin Public Service Commission, defended the commission's rule, saying that he believed it to be "an excellent one" and one designed to foster safety in the industry. He did say that his commission had hoped for a more stringent rule, but would be satisfied if the present one were enforced.

Allotments of Waterway Funds

The latest allotments of rivers and harbors funds by Secretary of War Harry H. Woodring list \$200,000 for the completion of channel regulating work on the Missouri river between Kansas City and the mouth, and \$50,000 for lock and dam construction in the Ohio river's Pittsburgh district. Also, the Houston Ship Channel gets \$27,000 while \$100,000 will go for surveys in the Little Rock, Ark., district.

Supply Trade

Paul D. Curtis has been elected vice-president of the **Marquette Railway Supply Co.**, Chicago, following the death of **Floyd L. Ingram**, president.

Thomas Toby, who was formerly connected with the **National Lock Washer Company**, Newark, N. J., has become affiliated with the **Pittsburgh Screw & Bolt Corporation** as a sales representative in the New York office.

W. W. Sebal, vice-president and assistant general manager of **The American Rolling Mill Company**, Middletown, Ohio, has been elected a director of the company, to fill the vacancy on the Armco board of directors caused by the death of **J. H. Frantz**, of Columbus.

Walter B. Strong, manager of the export division of the **Worthington Pump & Machinery Corporation**, Harrison, N. J., has been appointed assistant general sales manager. At the same time, he will continue to have general supervision of export sales and be identified with certain phases of domestic sales. **George Gellhorn, Jr.**, succeeds Mr. Strong as manager of the export division.

Avery C. Adams, who has been appointed vice-president and assistant general manager of sales of the **Inland Steel Company**, was employed by the **Trumbull Steel Company**, Warren, Ohio, in various capacities from 1919 to 1928. He resigned from this company as assistant general manager of sales in May of that year to become manager of the tin plate division of the **Republic Steel Corporation**. In July of the same year, he entered the em-



Avery C. Adams

ploy of the **General Fireproofing Company** in Youngstown, Ohio, as vice-president in charge of sales. He held this position until June, 1936, when he resigned to become manager of sales of the sheet division of the **Carnegie-Illinois Steel Corporation**, Pittsburgh, Pa., which position he held until his recent appointment.

OBITUARY

Walter D. Achuff, Sr., president of the **Achuff Railway Supply Company**, St. Louis, Mo., died in that city on December 3 of heart failure.

Lewis T. Canfield, who retired as vice-president of the **Cardwell Westinghouse Company**, Chicago, in 1936, died in that city on December 3, after a short illness. He was born on December 3, 1861, and entered railway service in 1879, in the shops of the **Indianapolis, Cincinnati & Lafayette**, later serving with its successor, the **Indianapolis, Cincinnati & St. Louis**, which later became a part of the **Cleveland, Cincinnati, Chicago & St. Louis**. In 1889, he entered the employ of the **Chicago, Rock Island & Pacific**, and for nine years served as foreman and division master car builder. In 1898, he resigned to become associated with the **Standard Railway Equipment Company**, and on April 15 of the following year, was appointed master car builder of the **Delaware, Lackawanna & Western**. He remained in this position until December, 1902, when he entered the employ of the **American Car & Foundry Co.**, where, until 1910 he was in charge of car building in Manchester,



Lewis T. Canfield

England and in Italy. In 1910, he resigned to become vice-president of the **Cardwell Westinghouse Company**, which position he held until his retirement in 1936.

Clift B. Keyes, 61, manager of the **New York District Transportation Department** of the **General Electric Company**, died at Mt. Vernon, N. Y., on December 7, following a lingering illness. Born in **Terre Haute, Ind.**, Mr. Keyes was graduated from **Rose Polytechnic Institute** in 1899, with a B.S. degree in electrical engineering. He immediately entered the testing department of the **General Electric Company** at **Schenectady, N. Y.**, and in 1901 was assigned to the construction department. His duties there included work on the electrification of the **West Jersey & Seashore**. He was transferred to the railway engineering department in 1907, and in the following year was moved to the engineering department of the company's **New York office**. From January, 1910, Mr. Keyes was associated with the railway commercial department in the **New**

York district. In 1924, he became assistant manager and in 1925, manager of the district office's railway department, which in 1929, was reorganized to become the transportation department with Mr. Keyes as manager. Mr. Keyes took an active part in the electrification of the **New York Central Terminal**. He was a member of numerous railroad organizations and engineering societies, including **Engineers Club**, **American Transit Association**, and the **American Institute of Electrical Engineers**.

C. E. Eklind, vice-president of the **Camel Sales Company**, a subsidiary of the **Youngstown Steel Door Company**, Chi-



C. E. Eklind

cago, died in that city on December 1, of a complication of ailments. He was born on October 8, 1878, at **Orebro, Sweden**, and was educated in that country and in Germany where he took post graduate work. He was first employed by the **Pressed Steel Car Company**, and in 1904 entered the mechanical department of the **Atchison, Topeka & Santa Fe**, where he served as a designing engineer. In 1923, he resigned to enter the employ of the **Camel Company**, Chicago, and in 1935, was elected vice-president of the **Camel Sales Company**, which became a subsidiary of the **Youngstown Steel Door Company** on December 1, 1937.

Construction

CHESAPEAKE & OHIO.—Work is being carried out by company forces as follows: Rebuilding apron north side of Pier 5 and widening outshore end at **Newport News, Va.**, to cost about \$67,000; rebuilding 14 pedestals of **Richmond viaduct** and repair caps on 30 pedestals at **Richmond, Va.**, to cost about \$41,000; re-arranging and extending yard tracks at **Martin, Ky.**, to cost about \$104,350; and the installation of sub-drainage system for embankment at **Dent, Ohio**, to cost about \$27,000.

Bids will be received on December 12 for the installation of automatic sprinkler systems, **Piers 4, 5, 6 and 8** at **Newport News, Va.**, to cost about \$132,400.

The **City of Charleston** is carrying out

improvements at passenger station, Charleston, W. Va., to provide parking space, at a cost of about \$100,331.

CHICAGO, BURLINGTON & QUINCY and CHICAGO, ROCK ISLAND & PACIFIC.—A contract amounting to \$128,572 has been awarded by the State of Nebraska to Dobson and Robinson Contractors, Lincoln, Neb., for the construction of two parallel and adjacent structures to provide a subway crossing on 48th street in Lincoln under two tracks of the Burlington, and one track of the Rock Island. Both bridges consist of steel superstructures on concrete piers and abutments supported on timber and concrete piling and provide for a 42 ft. clear roadway with sidewalks on both sides. The bridge under the Burlington tracks will have a ballast deck on wrought iron floor plates and the Rock Island bridge will have a ballast deck on a floor of steel grid, concrete-filled construction. Drainage of the subway is provided by means of a complete, automatic electrical pumping system.

Equipment and Supplies

P. & W. Va. to Ask R. F. C. to Help Finance Equipment Certificates

The Pittsburgh & West Virginia, in a recent application for Reconstruction Finance Corporation aid on a proposed \$7,500,000 note issue, for another purpose, revealed that it expects to file another application for aid in financing an issue of equipment trust certificates—in an amount to be determined after completion of a survey of its present equipment and its requirements for new rolling stock.

LOCOMOTIVES

THE ILLINOIS CENTRAL has approved a budget of \$780,000 for the conversion of thirteen 2-10-2 type locomotives into 4-8-4 type locomotives at the rate of one a month during 1939. The work will be done at the company's shops at Paducah, Ky.

READING-CENTRAL OF NEW JERSEY.—The Reading and the Central of New Jersey have placed orders for 15 Diesel-electric switching locomotives of 600 hp. for use on the two roads. The orders were allotted as follows: Nine to the Electro-Motive Corporation, four to the American Locomotive Company, one to the Baldwin Locomotive Works, and one to Fairbanks, Morse & Co. Ten of the switchers will be used on the Central of New Jersey and five on the Reading. Authorization of this purchase was reported in the *Railway Age* of November 12, page 724.

THE UNION PACIFIC has ordered one 4,000 hp. Diesel-electric locomotive, from the Electro-Motive Corporation, for use in its thirteen-car streamliner the "City of Los Angeles." Except for improvements in details and the fact that each of the four engines in the locomotive will have

1,000 hp. instead of 900 hp., the new locomotive will have the same appearance and construction principles as are embodied in the 5,400 hp. locomotives now handling the new "City of Los Angeles" and "City of San Francisco" streamlined trains. The 5,400 hp. locomotives have two 900 hp. engines in each of three units.

FREIGHT CARS

THE WHEELING & LAKE ERIE has ordered 400 self-clearing hopper cars of 60 tons' capacity from the Ralston Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of November 19, page 758.

IRON AND STEEL

THE CHESAPEAKE & OHIO is expected to enter the market for 25,000 tons of rails.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 2,600 tons of rails and 400 tons of track accessories from the Tennessee Coal, Iron & Railroad Company.

THE NORFOLK & WESTERN has placed orders for 13,000 tons of 131-lb. rail. The order was divided as follows: Carnegie Illinois Steel Co., 9,750 tons; Bethlehem Steel Co., 3,250 tons.

THE UNITED STATES BUREAU OF RECLAMATION, Denver, Colo., is inquiring for 3,160 tons of 112 and 131-lb. rails, 719 tons of tie plates, 150 tons of spikes, 280 tons of angle bars, 32 tons of track bolts, and 97 tons of anti-creeper, for delivery at Redding, Cal.

SIGNALING

LEHIGH VALLEY.—Sealed proposals will be received by this road, until 3:00 p. m. (e.s.t.) December 29, 1938, for furnishing the materials for one railroad grade crossing flashing light signal installation to be installed at Gilbert, N. Y. Further information may be obtained from E. J. Cullen, chief engineer, Lehigh Valley, Bethlehem, Pa.

SEABOARD AIR LINE.—Sealed proposals will be received by this road until 12:00 o'clock noon, December 27, for furnishing materials for the installation of highway grade crossing signals at one crossing in the State of Alabama, as part of the federal grade crossing program. Further information may be obtained by writing to J. L. Brown, purchasing agent, Seaboard Air Line, Norfolk, Va.

BALTIMORE & OHIO.—Sealed proposals will be received at the office of the purchasing agent of this road, Charles and Baltimore streets, Baltimore, Md., until 11 a. m. (e.s.t.) December 28, for the furnishing of signal material to be used in connection with the highway grade crossing program at State Aid Route #33 Black Lane, east of Hanover, St. Clair County, Ill. Complete description of material and further information relative to bidding, will be furnished by the purchasing agent on request.

Financial

BOSTON & MAINE.—RFC Loan Approved.—The Interstate Commerce Commission, Division 4, has approved a loan to this company of \$1,500,000 by the Reconstruction Finance Corporation, the proceeds to be used to repair damage to its tracks, roadbed, buildings and bridges occasioned by the recent New England hurricane and floods.

Commissioner Mahaffie dissented, saying that despite the fact that the loan is made for maintenance and hence no certificate as to the ability of the company to meet its fixed charges is required, "However, I do not believe we properly can disregard the financial prospects of a carrier even in such a case. If larger sums than are likely to be available are required for fixed charges, loans to pay, or to reimburse the treasury, for maintenance merely prolong the agony. For the reasons I stated in dissenting from the approval of a loan to the Chicago & North Western, I think it unwise to expend public funds in order to defer reorganization. The present and prospective earnings of this applicant indicate to me that reorganization of its financial structure cannot be avoided. In view of this I would not, at this time, lend it additional money."

CHESAPEAKE & OHIO.—Bonds.—This company has asked the Interstate Commerce Commission for authority to issue and sell \$30,000,000 of 3½ per cent refunding and improvement mortgage bonds for the purpose of retiring a like amount of first consolidated five per cent mortgage bonds which mature May 1, 1939. The company also asked authority to issue conditionally and pledge under its refunding and improvement mortgage \$30,000,000 of general mortgage 4½ per cent bonds.

Refunding.—Directors of the Chesapeake & Ohio, on December 2, sold \$30,000,000 of refunding and improvement bonds to Halsey, Stuart & Company, Inc., of Chicago, and Otis & Company, Inc., of Cleveland. The bonds, designated as 3½ per cent, 25 years series F, due December 1, 1963, were purchased at par and accrued interest. Proceeds are to be used for the retirement of \$30,000,000 of first consolidated mortgage 5 per cent bonds due May 1, 1939. The sale is subject to Interstate Commerce Commission approval. In connection with the bond issue, the C. & O. also will issue \$30,000,000 additional principal amount of its general mortgage 4½ per cent bonds due March 1, 1992, and pledge them under the refunding and improvement mortgage as security for the new bonds and also for the series D and E bonds outstanding. The new bonds will be dated December 1, 1938, and will mature December 1, 1963, and will have an unusual sinking fund for railroad obligations, it being 2 per cent a year, or sufficient to retire 50 per cent of the issue by maturity.

DENVER & RIO GRANDE WESTERN.—Trustee Certificates.—Trustees of the Denver & Rio Grande Western have asked

the federal district court at Denver for authority to issue and sell \$5,000,000 of trustee certificates of indebtedness, Series G, to be dated February 1, 1939, and bearing interest at a rate not exceeding 4 per cent per annum. The principal is to be payable not later than February 1, 1944, and the issue is subject to call and redemption in whole or in amounts of \$1,000,000 face value, or multiples thereof, on any interest paying date up to and including February 1, 1940, at par and a premium of 1 per cent of par, and accrued interest, and after February 1, 1940 at par and accrued interest. The proceeds of the issue and sale of the certificates are to be applied to the payment of the principal of \$3,200,000 of trustee certificates of indebtedness, Series D, due February 1, 1939, and \$1,800,000 of trustees certificates of indebtedness, Series E, due February 2, 1939.

LEHIGH VALLEY.—*New Directors.*—Four vacancies on the board of directors of this road have been filled by the election of Brandon Barringer, vice-president of the Pennsylvania Company, Philadelphia; Ernest G. Smith, publisher, Wilkes-Barre, Pa.; J. N. Haines, general manager, and A. F. Bayfield, comptroller of the Lehigh Valley, Bethlehem, Pa.

NEW YORK CENTRAL.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon that portion of its line extending easterly from Caledonia, N. Y., to Holcomb, 25.1 miles. At the same time the commission denied the company the authority to abandon that portion of the branch extending easterly from Holcomb, N. Y., to Canandaigua, 8.1 miles. Commissioner Mahaffie dissented, saying that he would grant the entire application, in view of the fact that the traffic has largely gone to other means of transportation.

PITTSBURGH & WEST VIRGINIA.—*Notes with R. F. C. Guarantee.*—This company has applied to the Interstate Commerce Commission for approval of a plan whereby it is seeking a Reconstruction Finance Corporation guarantee of \$7,500,000 of secured notes which would mature within five years and be sold to banks at a rate of 2½ per cent plus such additional amount as the R. F. C. may require as compensation for its guarantee. Proceeds would be used as follows: \$4,216,607 for the payment of four outstanding R. F. C. loans; \$2,899,538.47 for the payment of promissory notes held by banking institutions; \$200,000 for the payment of the April 1, 1939, maturity on P. & W. V. equipment trust certificates, series of 1936, of which there are \$1,600,000 outstanding; and \$183,854.53 for the payment of overdue vouchers covering expenses for materials and supplies. The application reveals that the applicant intends to file another in connection with an issue of equipment trust certificates as soon as it has completed a survey of its present equipment and its requirements for new rolling stock.

QUINCY, OMAHA & KANSAS CITY.—*Dismissal of Abandonment Application.*—The Interstate Commerce Commission, Division

4, has dismissed, at the request of this company, its application to abandon its line extending from Quincy, Ill., to Kansas City, Mo.

ST. LOUIS-SAN FRANCISCO.—*Reorganization.*—The Interstate Commerce Commission, Division 4, has rejected petitions of the Reconstruction Finance Corporation and the Railroad Credit Corporation that the commission make a comprehensive investigation of this company, with reference to the property, business, earnings and corporate organization of the carrier in connection with the preparation of reorganization plans.

SAVANNAH & ATLANTA.—*Certification of Results of Voting on Reorganization Plan.*—The Interstate Commerce Commission, Division 4, has certified that holders of \$783,000 of Brinson Railway Company bonds and/or holders of certificates of deposit, constituting 100 per cent of those voting in class IV, accepted this company's reorganization plan; and that holders of \$1,811,500 of Savannah & Atlanta bonds and/or holders of certificates of deposit constituting 99.5 per cent of those voting in class V, accepted the plan and the holders of \$8,500 of Savannah & Atlanta bonds and/or holders of certificates of deposit, constituting 0.5 per cent of those voting in class V, rejected the plan.

SUNSET.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon that part of its line extending from Taft, Calif., to Shale, seven miles.

WABASH.—*First Mortgage Interest Payment.*—Receivers of the Wabash have filed a petition in the district court at St. Louis for permission to pay 20 per cent of the balance due on the interest coupons due November 1, 1937, on first mortgage bonds. Authority also was sought to pay two 20 per cent installments of interest of Detroit & Chicago first mortgage bonds, due July 1, 1937 and January 1, 1938, and the remaining 20 per cent on two installments due September 1, 1937 and March 1, 1938 on Toledo & Chicago first mortgage bonds. The court set December 14 for a hearing on the petition.

Average Prices of Stocks and Bonds

	Dec. 6	Last week	Last year
Average price of 20 representative railway stocks..	29.30	29.98	32.81
Average price of 20 representative railway bonds..	59.58	60.05	67.21

Dividends Declared

Albany & Susquehanna.—\$4.50, semi-annually, payable January 1 to holders of record December 15.
 Joliet & Chicago.—\$1.75, quarterly, payable January 3 to holders of record December 20.
 Lackawanna R. R. of New Jersey.—\$1.00, quarterly, payable January 1 to holders of record December 9.
 Morris & Essex.—\$2.13, payable January 3 to holders of record December 9.
 Pittsburgh, Ft. Wayne & Chicago.—\$1.75, quarterly; Preferred, \$1.75, quarterly, both payable January 3 to holders of record December 10.
 St. Louis Rocky Mountain & Pacific.—Preferred, \$1.25, quarterly, payable December 31 to holders of record December 15.
 West Jersey & Seashore.—\$1.50, semi-annually, payable January 3 to holders of record December 15.

Railway Officers

EXECUTIVE

John K. Thompson, vice-president and assistant to the president in charge of accounting, of the Erie, with headquarters at Cleveland, Ohio, has been appointed vice-president in charge of accounting and finance.

W. S. Bronson, vice-president and general counsel of the Pittsburgh & West Virginia, with headquarters at Washington, D. C., has retired from active service at his own request. **Amnon I. Derr**, assistant to president, comptroller and secretary, with headquarters at Pittsburgh, Pa., has been elected vice-president and secretary.

FINANCIAL, LEGAL AND ACCOUNTING

R. W. Lederer, chief clerk to the assistant general auditor of the Elgin, Joliet & Eastern, at Chicago, has been promoted to the newly-created position of auditor of disbursements, and **A. W. Heintz**, chief clerk of the transit division at Chicago has been promoted to the newly-created position of auditor of freight accounts.

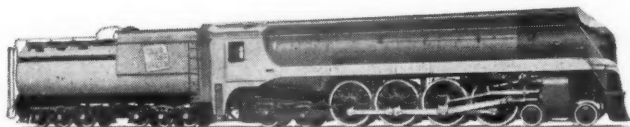
E. F. Morgenroth, assistant treasurer of the Erie, with headquarters at Cleveland, Ohio, has been promoted to treasurer, and **G. A. W. Achenbach**, assistant secretary, with the same headquarters, has been advanced to secretary. These men succeed to the duties of **John G. Walsh**, whose resignation as secretary and treasurer of the Erie was reported in the *Railway Age* of October 29.

John L. Erdall, general solicitor of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been promoted to general counsel, with the same headquarters, succeeding **Henry S. Mitchell**, who has resigned to reengage in private practice, and **James L. Hetland**, assistant general solicitor, with headquarters at Minneapolis, has been advanced to general solicitor replacing Mr. Erdall.

E. M. Davis, general solicitor of the Pennsylvania, with headquarters at Philadelphia, Pa., retired on November 30, under the railroad's pension plan. **Albert Ward**, assistant general counsel, has been appointed general attorney. Mr. Davis was born at Saranac, Mich., and completed his education in Olivet College and the Detroit College of Law. Following his admission to the bar in 1899, he practiced law for a number of years in Ionia, Mich., and also served as assistant prosecuting attorney of Kent County for three years. In 1915 Mr. Davis became assistant general counsel of the Grand Rapids & Indiana and later became head of its legal department. Upon the lease of the Grand Rapids & Indiana to the Pennsylvania on January 1, 1921,

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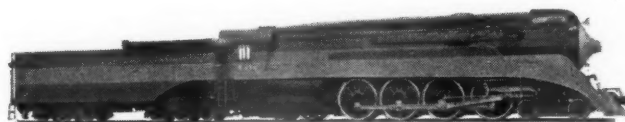
METHODS AND MACHINERY THAT GUARD LIMA QUALITY



Six 4-8-4 streamlined passenger locomotives have been recently delivered by Lima to the Grand Trunk Western.



Four heavy 4-8-4 type locomotives, designed to meet the requirements of high capacity, high speed freight service, recently delivered to the Soo Line by Lima



Twenty streamlined high speed passenger locomotives have been delivered by Lima to the Southern Pacific Lines to haul the "Daylight".

A FEW of the high speed, high powered Lima built locomotives recently put in service. Thanks to the methods and machinery that have made Lima famous for quality, these locomotives have low maintenance and high availability. Lima locomotives, through their dependability and economy of maintenance, have made ...and are making... Lima's Reputation.



LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

he entered the legal department of the latter as assistant general solicitor, and in 1924 was promoted to assistant general counsel, with headquarters at Pittsburgh. In that capacity, from 1928 to 1931, he was in general charge of the legal work of the western lines of the system. On May 1, 1931, Mr. Davis was transferred to Philadelphia and on October 1, 1932, was promoted to general solicitor of the system.

J. W. Shields has been appointed auditor of disbursements of the Norfolk & Western, at Roanoke, Va., as reported in



J. W. Shields

the *Railway Age* of December 3. Mr. Shields was born on December 28, 1893, at Roanoke, and was educated in the local public schools and business college. He became connected with the Norfolk & Western in October, 1909, as a messenger in the accounting department, later serving as clerk to the comptroller, bookkeeper, clerk in charge of construction accounts, first assistant to general bookkeeper, chief clerk to auditor of disbursements, and chief clerk to comptroller. He served in the World War from March, 1917, to April, 1919. Mr. Shields was promoted to general accountant in January, 1937, the position he held until his recent appointment.

Martin Eckert, general auditor of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to chief



Martin Eckert

accounting and financial officer, with the same headquarters, succeeding **Fred P.**

Johnson, whose death on November 11 was noted in the *Railway Age* of November 19. Mr. Eckert was born at Columbia, Ill., on September 6, 1873, and attended business college at Belleville, Ill. He was engaged for a time as a Western Union messenger before entering railway service in 1891 as a telegraph operator and ticket clerk at Belleville for the Louisville, Evansville & St. Louis (now a part of the Southern). In 1893, he was transferred to East St. Louis, Ill., as a telegrapher and dispatcher, and a year later became chief clerk to the agent of the Southern at that point. In 1898, he went with the Missouri-Kansas-Texas as a clerk in the accounting department at St. Louis, and in 1902, he went with the Wabash in a similar capacity at the same place. He entered the accounting department of the Missouri Pacific's Gulf Coast Lines in 1908, as chief clerk at Beaumont, Tex., and became general auditor, with headquarters at Houston, Tex., in 1918. Mr. Eckert was promoted to general auditor of the Missouri Pacific, with headquarters at St. Louis, on February 1, this year, which position he held at the time of his recent promotion.

Arthur W. Bowman, assistant treasurer of the New York, New Haven & Hartford, has been appointed treasurer, with headquarters at New Haven, Conn., succeeding **Thomas F. Paradise**, who has



Arthur W. Bowman

retired from active service after completion of 57 years' service. **E. L. Bartholomew**, cashier, has been appointed assistant treasurer. Mr. Bowman was born in New Haven on January 18, 1872, and entered the service of the New Haven in the Water street freight office on July 1, 1888. A year later he was transferred to the treasurer's office where he has worked ever since. Mr. Bowman was appointed cashier in 1903, subsequently becoming second assistant treasurer and assistant treasurer.

Mr. Paradise was born in Stamford, Conn., on July 2, 1862, and on leaving public school worked for three years with the Yale Lock Company. He entered the service of the New Haven as an office boy in the treasurer's office, then at New York, and his entire 57 years have been in that department. In 1887 the general offices of the company were moved to New Haven, and Mr. Paradise worked in various cleri-

cal positions, subsequently becoming receiving teller, and in 1903 was appointed assistant treasurer. He was promoted to treasurer in 1930, the position he held until his retirement.

OPERATING

J. M. Apple, night chief dispatcher of the Norfolk & Western, has been appointed chief dispatcher on the Shenandoah division, at Roanoke, Va., succeeding **C. A. Graves**, who has retired. **C. P. Harris**, dispatcher, has been appointed night chief dispatcher, to succeed Mr. Apple.

C. Percy has been appointed assistant to the general manager, in charge of trucking operations, on the Texas & Pacific, with headquarters at Dallas, Tex., succeeding **R. C. Parker**, whose promotion to chief special agent is reported elsewhere in this issue.

R. A. Nelson, trainmaster of the Norfolk division of the Norfolk & Western, with headquarters at Crewe, Va., has been appointed superintendent of Roanoke terminal, to succeed **W. B. Houchens**, who has retired. **A. J. Graham**, road foreman of engines of the Pocahontas division, at Bluefield, W. Va., has been appointed trainmaster of the Norfolk division, succeeding Mr. Nelson.

Mr. Houchens was born on February 14, 1871, and entered the service of the Norfolk & Western as a telegraph operator in Roanoke on January 8, 1891. He became yard clerk in 1900 and was promoted to assistant yardmaster two years later and to general yardmaster in 1905. Mr. Houchens was promoted in 1920 to terminal trainmaster and became superintendent of Roanoke terminals in 1922, the position he held until his retirement.

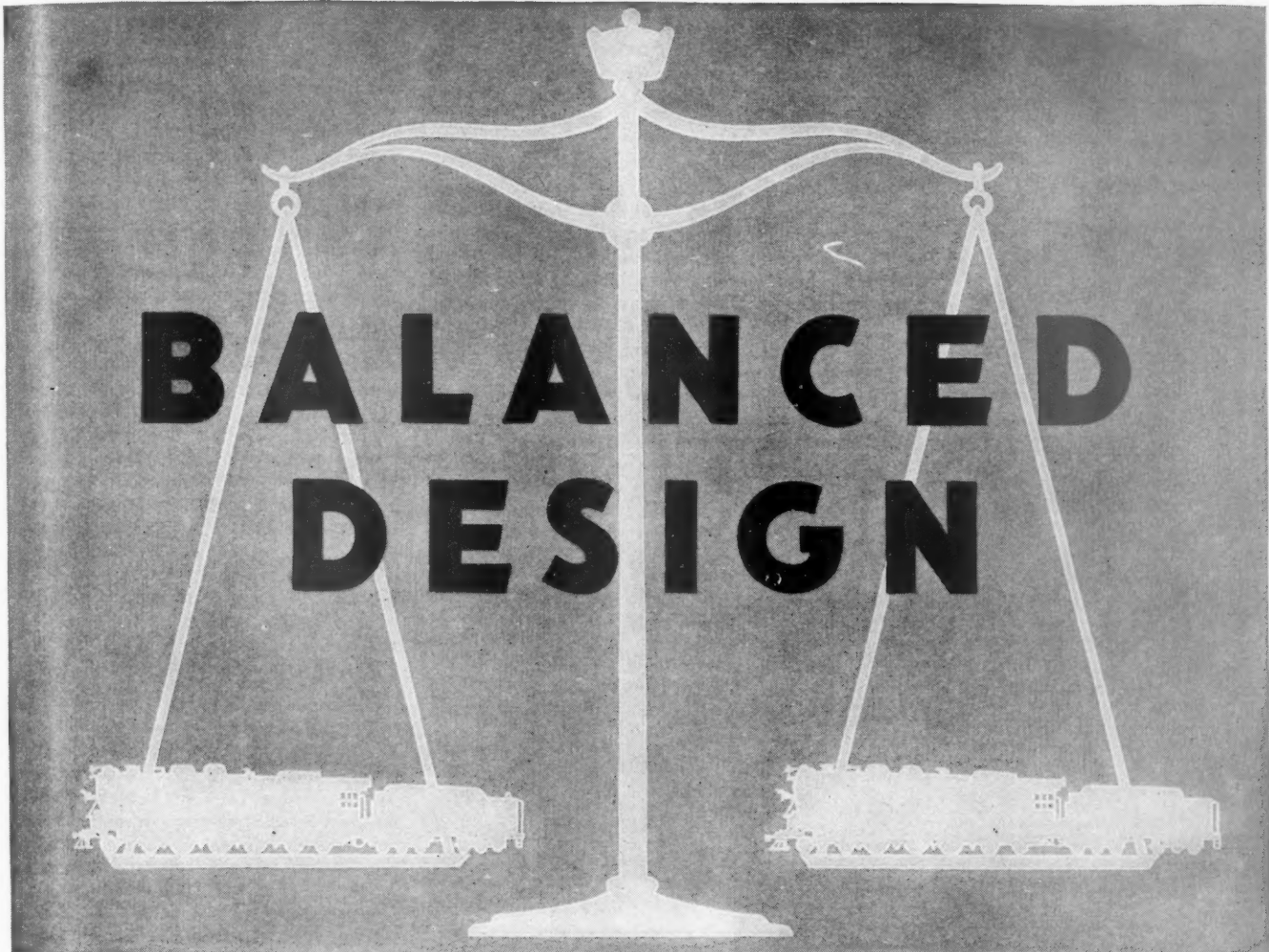
George W. Blake, whose appointment as superintendent of the Fitchburg division of the Boston & Maine at Greenfield, Mass., was noted in the *Railway Age* of November 19, has been with the B. & M. for 36 years. Mr. Blake was born at Portsmouth, N. H., and began railroad



George W. Blake

work with the Boston & Maine in June, 1902, as a telegrapher and freight clerk. He was promoted to train dispatcher in 1910 and to trainmaster in 1922. Mr. Blake be-

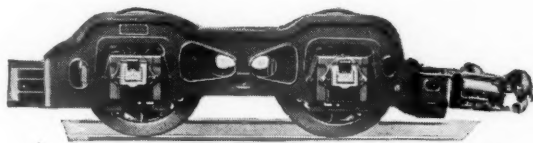
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at 90 M.P.H. or at 9 M.P.H.

Modern high-speed passenger locomotive schedules demand speeds of 90 M.P.H....and up. The locomotives are designed to maintain these speeds...when they get rolling. But if power for starting is obtained from the main locomotive alone, highly destructive effects on track result when the locomotive reaches road-speed. » » » This problem of maintaining necessary top-speeds, yet reducing the destructive effect on the track, is being solved...by incor-

porating Booster Power in the original design. » » » The added power, obtained from what would otherwise be an idle trailing truck, gives added tractive effort to the locomotive in starting; and makes possible substantial reductions in the weight of revolving and reciprocating parts, with a resultant decrease in the dynamic augment. » » » Bring relief to your track...yet maintain your schedule...with Booster Power.



Franklin repair parts are made with jigs and fixtures that insure interchangeability, long life and dependability of service. Genuine Franklin parts are a guarantee of maximum trouble-free service.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK

CHICAGO

MONTREAL

came assistant superintendent of the Fitchburg division in 1930, the position he held until his appointment as division superintendent, effective December 1.

John E. Kemp, whose promotion to superintendent of the Grand Junction division of the Denver & Rio Grande Western



John E. Kemp

was announced in the *Railway Age* of November 19, was born at Dresden, Mo., on January 26, 1890, and entered railway service on July 24, 1907, as a telegraph operator on the Pueblo division of the D. & R. G. W. On December 25, 1912, he was promoted to train dispatcher and served in that capacity on the Pueblo and Salida divisions. On May 1, 1920, he was advanced to night chief dispatcher on the Pueblo division, and on October 1 of that year, he was promoted to chief dispatcher of that division, later being transferred to the Gunnison division. Mr. Kemp was advanced to trainmaster on June 16, 1927, and served in that capacity on various subdivisions of the Pueblo division. On November 10, 1938, he was promoted to assistant superintendent of the Grand Junction division, the position he held at the time of his recent promotion.

William Davis, whose appointment as general manager of the Peoria & Eastern,



William Davis

with headquarters at Indianapolis, Ind., was announced in the *Railway Age* of

November 5, was born at Newport, Ky., on March 9, 1876, and entered the service of the Cleveland, Cincinnati, Chicago & St. Louis (New York Central) on December 29, 1892, as a messenger boy in the office of the chief yard clerk at Cincinnati, Ohio. He was later appointed successively, chief clerk to the general yardmaster, and chief clerk to the assistant general manager. In 1913, he was promoted to inspector of transportation and general yardmaster at Indianapolis, and in 1918, he was advanced to acting superintendent, with headquarters at Cincinnati. In 1921, he returned to Indianapolis as general yardmaster and trainmaster of the terminal, and in 1929 he was promoted to superintendent of the Indianapolis terminal and the Springfield division. Mr. Davis was appointed assistant superintendent of the Indiana division with headquarters at Indianapolis in 1931, the position he held at the time of this recent appointment.

J. D. Beltz, superintendent of the Pittsburgh division of the Baltimore & Ohio, has been appointed general superintendent of the Pennsylvania district, with headquarters at Pittsburgh, Pa., as noted in the *Railway Age* of November 5. Mr. Beltz was born on November 19, 1877, at Lima-



J. D. Beltz

ville, Ohio, and attended Curry College, Pittsburgh. He entered railroad service with the Baltimore & Ohio in March, 1894, as an engine wiper and rivet heater. From April, 1896, to December, 1898, he was consecutively warehouseman, ticket agent and clerk, and from the latter part of 1898 to November, 1901, served as fireman, then becoming locomotive engineer. On July 26, 1912, Mr. Beltz was promoted to assistant road foreman of engines, later becoming trainmaster. On November 16, 1917, he became assistant superintendent and on March 6, 1920, superintendent of the Pittsburgh terminals, six months later being promoted to superintendent of the Pittsburgh division. On February 19, 1926, he was transferred as superintendent to the Connellsville division, with headquarters at Connellsville, Pa. On February 14, 1932, the Connellsville division, Pittsburgh division and Pittsburgh terminal division were consolidated into the Pittsburgh division and Mr. Beltz became superintendent of this division, with headquarters at Connellsville. On February 1, 1933, his headquarters were changed to Pittsburgh.

TRAFFIC

P. J. Tierney, general freight agent on the Chesapeake & Ohio, with headquarters at Richmond, Va., has been promoted to the newly created position of assistant freight traffic manager with the same headquarters, and **Thomas Jefferson, Jr.**, assistant general freight agent with headquarters at Chicago, has been promoted to general freight agent, with headquarters at Richmond. **F. A. Hansen**, assistant to the general freight agent at Chicago, has been promoted to assistant general freight agent at that point, succeeding Mr. Jefferson, and **R. J. Beatty**, commerce agent, with headquarters at Richmond, has been promoted to the newly created position of general freight agent, commerce, with the same headquarters. **R. P. Laird**, who was formerly assigned to division work in the general freight agent's office at Richmond, has been advanced to the newly created position of general freight agent, divisions, with the same headquarters, and **C. H. Noble**, coal freight agent, tariffs, at Richmond, has been promoted to general coal freight agent, rates, a newly created position, with the same headquarters.

Edward R. Morris, assistant freight traffic manager of the New York, Ontario & Western, has been promoted to coal traffic manager, with headquarters at New York. **James L. Carr**, general agent at Boston, Mass., has been promoted to perishable freight agent, with headquarters at San Francisco, Cal., effective January 1. **J. F. Kitchen**, division freight and passenger agent at Middletown, N. Y., has retired of his own volition after 46 years of service with this road. **Ralph E. Wright**, station agent at Port Jervis, N. Y., has been promoted to district freight agent, with headquarters at Middletown, having jurisdiction over all freight solicitation on the Southern and Scranton divisions, except coal traffic in the Scranton region. **Joseph A. Van Wie**, coal traffic representative, has been promoted to coal freight agent, with headquarters at Scranton, Pa.



Edward R. Morris

ton, Pa. Mr. Van Wie's duties will be confined mainly to the solicitation of coal traffic in the Scranton region.

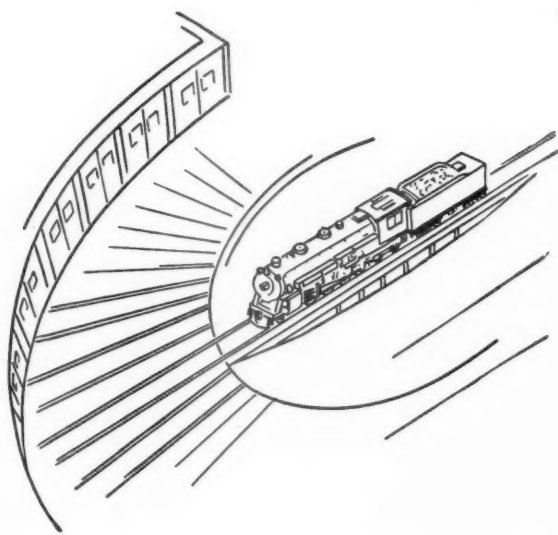
Mr. Morris was born on August 30, 1895, in New York City. Upon leaving

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B E S U R E

No Arch Brick

Is Missing



There's More to SECURITY ARCHES Than Just Brick



In these days of rigid economy, don't draw the line too fine and let a locomotive leave the roundhouse with an imperfect Arch due to lack of supplies.

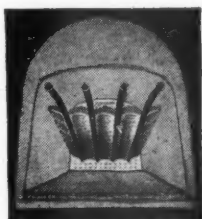
A single missing Arch Brick has a mighty serious effect on steaming and on the efficiency of the locomotive.

Today, a dollar's worth of fuel means more than ever before. To spend it effectively, every Locomotive Arch should be maintained in perfect condition.

Be sure your stocks on hand are ample to provide fully for all locomotive requirements, so that locomotive efficiency will not suffer.

**HARBISON-WALKER
REFRACTORIES CO.**

Refractory Specialists



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INCORPORATED**

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*Locomotive Combustion
Specialists*

high school, he entered the employ of the New York, Ontario & Western, which he has served continuously, with the exception of a two-year period during the World War. During his 27 years with the road he has served as chief of the tariff bureau, traffic representative, assistant to traffic manager and general freight agent, which position he held until October, 1937, when he was appointed assistant freight traffic manager. Mr. Morris was admitted as a practitioner before the Interstate Commerce Commission on May 26, 1936.

MECHANICAL

Joseph Brodnax Blackburn, mechanical assistant (locomotives) to the chief mechanical officer of the Chesapeake & Ohio, Pere Marquette and Nickel Plate, has been appointed mechanical engineer at Richmond, Va.

H. W. Reynolds, assistant mechanical engineer of the Norfolk & Western has been appointed mechanical engineer, at Roanoke, Va., succeeding **J. A. Pilcher**, who has retired. **W. H. Jackson**, assistant road foreman of engines of the Norfolk division, at Crewe, Va., has been appointed road foreman of engines of the Pocahontas division, at Bluefield, W. Va., to succeed **A. J. Graham**, who has been appointed trainmaster of the Norfolk division.

Mr. Pilcher was born in Richmond, Va., on January 1, 1868, and entered the service of the Norfolk & Western on January 13, 1891, as draftsman in the mechanical engineer's office at Roanoke. Eight years later he became associated with the Baldwin Locomotive Works. In 1902 he returned to the Norfolk & Western as mechanical engineer, the position he held until his retirement.

OBITUARY

William Jennison, signal inspector of the Baltimore & Ohio, died suddenly from a heart attack at his home in Baltimore, Md., on October 31, at the age of 57.

William C. Donnelly, general supervisor of time service of the Baltimore & Ohio, with headquarters at Baltimore, Md., died on December 3 after a brief illness. He was 69 years old.

E. Z. Mann, general mechanical instructor of the Atlantic Coast Line, with headquarters at Waycross, Ga., died at his home in that city on November 3. After serving in various other capacities, Mr. Mann served as road foreman of engines of the Atlantic Coast Line from 1918 to 1927, when he became general mechanical instructor.

William U. Moyer, former assistant to president of the Pennsylvania and affiliated companies, and later vice-president, secretary and assistant treasurer of the Pennroad Corporation, with headquarters at New York, died at the University of Pennsylvania hospital, Philadelphia, on December 3 after an illness of several months. He was 57 years old.

Brannon C. Crow, whose resignation as vice-president of the Cisco & North-

eastern, and vice-president and assistant treasurer of the Weatherford, Mineral Wells & Northwestern, with headquarters at Cisco, Tex., and Weatherford, respectively, was announced in the *Railway Age* of October 29, died at Mineral Wells, Tex. on October 30.

H. W. Morrison, retired assistant freight traffic manager of the Chicago, Rock Island & Pacific, died at his home at Newport, Ark., on November 29. Mr. Morrison, prior to 1890, was general agent for the St. Louis, Arkansas & Texas (now part of the St. Louis-Southwestern) at Memphis, Tenn. In July, 1890, he went with the Little Rock & Memphis (now part of the Rock Island) as general freight and ticket agent and was later promoted to assistant freight traffic manager of the Choctaw, Oklahoma & Gulf (now part of the Rock Island) with headquarters at Little Rock, Ark. He retired from that position on April 1, 1932.

L. V. Beatty, general freight agent of the Kansas City Southern, with headquarters at Kansas City, Mo., died suddenly on November 28. Mr. Beatty was born in Philadelphia, Pa., on October 19, 1868, and entered railway service on December 26, 1898, as a rate clerk on the Kansas City Southern at Kansas City. He was subsequently promoted through several clerical positions, and on June 1, 1900, he was advanced to traveling freight agent. On August 1, 1905, he was promoted to general agent at Kansas City, and on September 1, 1918, he was advanced to division freight agent. Mr. Beatty was promoted to assistant general freight agent on March 1, 1920, and on May 1, 1929, he was further advanced to general freight agent.


Harry J. Armstrong, retired chief engineer of the Missouri & North Arkansas, and at one time general superintendent of transportation and maintenance of way of that road, died of a heart attack at his home in Harrison, Ark., on November 19. Mr. Armstrong entered railway service in 1879, with the Atchison, Topeka & Santa Fe, and was employed on construction work in the Southwest with that road and later with the Chicago, Rock Island & Pacific. In the spring of 1916, he went with the Missouri & North Arkansas as a resident engineer and later became division engineer with headquarters at Harrison, Ark. In the spring of 1920, he was promoted to chief engineer, and two years later he was advanced to general superintendent of transportation and maintenance of way. In March, 1926, he was again appointed chief engineer and served in that capacity until the spring of 1931.

Robert E. Burns, general traffic agent of the New York, New Haven & Hartford, with headquarters at New York, died on December 2 at his home in West Haven, Conn., after an illness of several weeks. He was 47 years old. Mr. Burns was born on July 16, 1891, at Keokuk, Iowa, and attended public school in New Haven, Conn., and Yale Business College. He entered the service of the New York, New Haven & Hartford in June, 1907, as office boy in the general traffic department, later

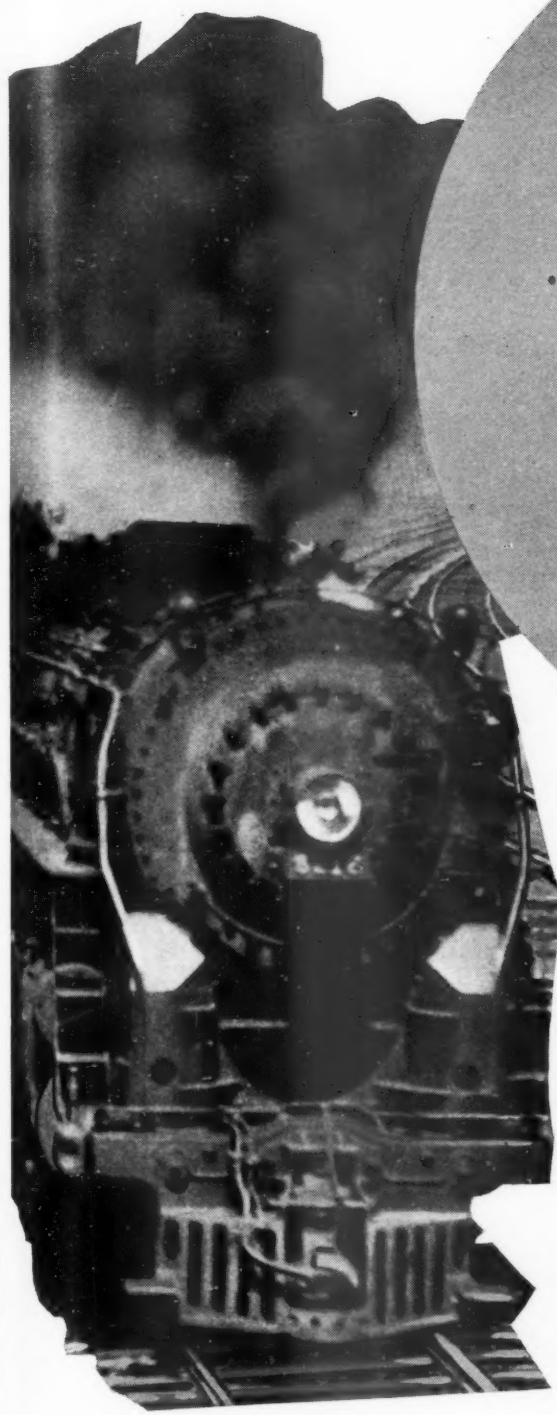
being advanced to clerk. In 1912 he was transferred to the mechanical department as stenographer and entered the traffic department in 1913 as stenographer in the vice-president's office. In the latter part of 1914 he went to the Boston & Maine in the president's office. Mr. Burns returned to the New Haven in January, 1916, serving in the office of the vice-president in charge of traffic at New Haven, subsequently becoming stenographer, secretary and chief clerk to the vice-president. In December, 1930, he was appointed general traffic assistant and on June 15, 1934, became assistant general traffic agent at New York. He was appointed general traffic agent in November, 1937.

Herbert J. Sewell, superintendent of the St. Louis terminal of the Chicago, Rock Island & Pacific, with headquarters at St. Louis, Mo., died of pneumonia, at that point on November 30. Mr. Sewell was born at Green Island, N. Y., on July 20, 1880, and entered railway service on December 4, 1897, as a stenographer and clerk in the signal department of the New York Central. On April 2, 1907, he went with the Rock Island as a traveling car accountant, and on June 13, 1909, he transferred to the operating department as a clerk. On February 28, 1911, he was promoted to chief clerk to the superintendent at Little Rock, Ark., and three months later he was appointed chief clerk to the superintendent and assistant general manager. On October 10, 1912, he was advanced to trainmaster, with headquarters at El Reno, Okla., and on November 1, 1915, he was appointed acting division superintendent with headquarters at Amarillo, Tex. Mr. Sewell was promoted to division superintendent, with headquarters at El Dorado, Ark., on July 1, 1916, and later served in that capacity at Fort Worth, Tex., Shawnee, Okla., and Trenton, Mo. On October 1, 1936, he was appointed superintendent of the St. Louis Terminal of the Rock Island.

Lewis Slocum West, vice-president and general manager, Despatch Shops, Inc., died at his home in Rochester, N. Y., on December 3. Mr. West was well known in railroad circles. He was 64 years old having been born on July 7, 1874. He was a director of the Despatch Shops, Inc., the Merchants Despatch Transportation Corporation, the Northern Refrigerator Line, Inc., the Genesee Valley Trust Company, the American Clay & Cement Company. Mr. West entered railroad service on June 10, 1895, as a clerk in the motive power department of the New York Central, on the Mohawk division. Nine years later he went to work for the Boston & Albany, a New York Central leased line, as storekeeper at Springfield, Mass. The next four years he worked for the railroad in Boston, Mass., Rutland, Vt., Oswego N. Y., and New York going to Rochester in 1910 as an order clerk for the Merchants Despatch Transportation Company. Three years later he was made superintendent and in 1921 vice-president and general manager. In 1936 the name of the corporation was changed to the Despatch Shops, Inc.



Worthy *of the* Best Care



When a boiler is not equipped with a superheater, it has to generate 28 lb. of steam to develop one i.hp. When equipped with a superheater developing 350 degrees of superheat, it requires only 14 lb. or 50% less steam per i.hp. Such an equipment is worthy of the best care.

To lose the efficiency of the superheater through negligence or patch repairs, when it becomes old, is not wise. The only way to dependably extend its life is to have the units REmanufactured at the Elesco plant. In this process new return bends are not commercial bends stuck on lengths of your old tubing; they are formed from tested superheater tubing by machine-die-forging.

Maintain the high efficiency and dependability of your superheaters—they are worth it.



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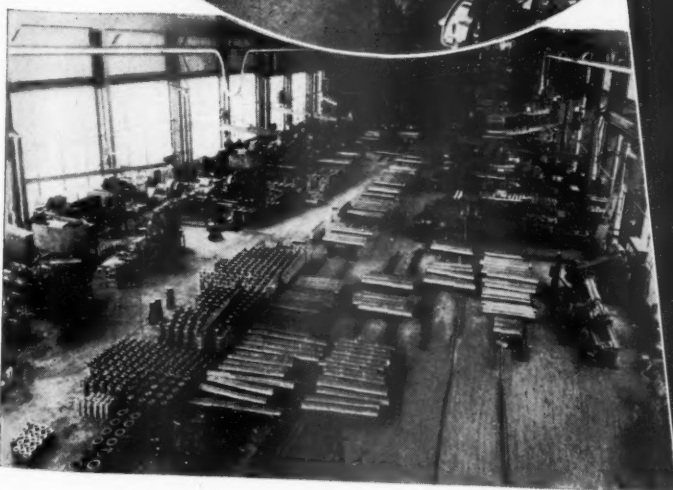
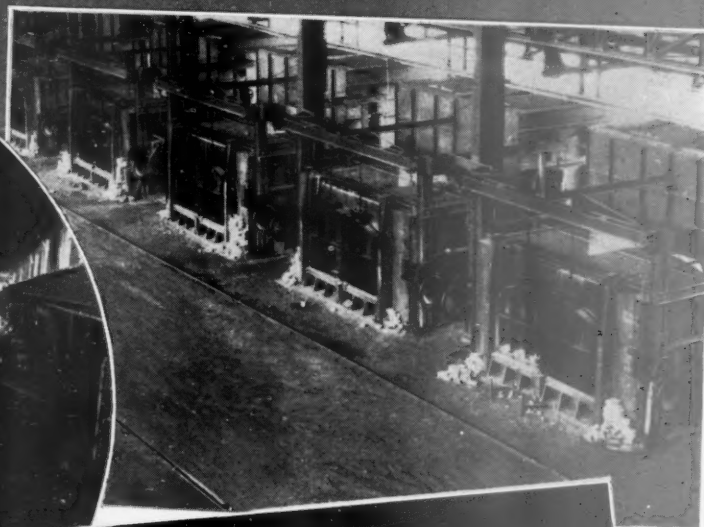
REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1938

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	
		Freight	Passenger	Total (inc. misc.)	Maintenance of way and structures	Equipment	Traffic		Operating income	Net railway operating income
Akron, Canton & Youngstown.....	Oct. 171	\$165,184	\$34	\$172,200	\$19,616	\$17,251	\$13,213	65.2	\$47,218	\$30,412
Alton	10 mos. 171	1,301,842	425	1,351,800	217,736	167,609	119,341	78.3	292,683	24,095
Alton	Oct. 957	1,044,384	224,502	1,480,360	234,651	169,054	44,853	71.7	418,262	129,582
Alton	10 mos. 957	9,003,788	2,077,392	12,822,241	1,740,399	1,874,180	450,904	78.8	2,713,881	709,898
Atchison, Topeka & Santa Fe System.....	Oct. 13,500	12,634,848	1,381,318	15,241,355	2,073,521	3,140,311	414,244	73.4	4,056,952	2,804,790
Atlanta & West Point.....	10 mos. 13,507	102,766,641	14,276,000	127,633,775	16,279,595	27,711,677	4,384,369	78.5	27,494,477	15,056,893
Atlanta	Oct. 93	118,474	22,223	164,524	16,360	22,418	8,286	74.6	41,825	16,684
Atlanta	10 mos. 93	938,926	233,384	1,382,486	179,565	247,865	80,339	90.7	129,006	3,596
Western of Alabama.....	Oct. 133	117,857	24,418	162,185	20,777	25,310	8,076	75.3	40,050	23,115
Atlanta, Birmingham & Coast.....	10 mos. 133	940,402	236,591	1,348,159	196,562	280,914	77,618	88.5	154,386	88,109
Atlanta	Oct. 639	277,429	3,880	281,309	35,708	49,807	23,323	78.0	68,544	3,546
Atlanta	10 mos. 639	2,371,588	168,717	2,811,557	422,771	504,350	237,303	89.8	286,978	21,573
Atlantic Coast Line.....	Oct. 5,106	2,639,596	310,256	3,372,575	448,655	698,562	144,714	83.8	546,519	139,829
Charleston & Western Carolina.....	10 mos. 5,105	26,803,535	6,066,273	36,733,745	4,455,117	6,905,956	1,467,666	80.3	3,290,923	1,885,130
Charleston	Oct. 343	177,351	1,001	182,531	26,111	32,979	8,131	73.6	48,266	31,766
Charleston	10 mos. 343	1,747,479	12,492	1,802,645	258,731	330,818	80,011	76.6	421,641	209,796
Baltimore & Ohio.....	Oct. 6,431	11,777,448	852,768	13,440,216	1,396,854	2,484,210	372,072	70.2	4,003,609	2,721,565
Baltimore	10 mos. 6,438	94,572,129	8,741,132	110,492,499	10,187,483	23,493,571	3,713,881	78.2	24,061,898	15,283,822
Staten Island Rapid Transit.....	Oct. 24	60,604	78,990	149,882	9,037	21,791	1,022	85.0	22,460	6,584
Staten Island	10 mos. 24	506,209	745,422	1,350,274	97,680	195,844	828,224	91.8	11,062	17,486
Bangor & Aroostook.....	Oct. 604	285,693	11,979	316,578	70,511	90,442	7,290	94.1	18,747	13,693
Bessemer & Lake Erie.....	10 mos. 604	4,397,685	160,602	4,766,333	1,058,912	900,947	3,574,679	75.5	1,161,454	697,304
Bessemer	Oct. 224	1,273,380	601	1,285,363	103,180	189,685	124,439	69.3	756,239	591,936
Bessemer	10 mos. 224	6,677,626	6,357	6,872,163	919,878	1,916,425	4,764,965	61.2	2,107,258	1,606,328
Boston & Maine.....	Oct. 1,955	2,928,290	491,549	3,887,961	1,065,841	529,875	63,617	88.0	465,895	132,546
Burlington, Rock Island.....	10 mos. 1,958	22,578,274	5,813,492	32,920,182	5,146,991	4,971,740	644,855	81.3	6,142,762	2,995,515
Burlington	Oct. 255	111,588	18,137	137,688	17,887	18,116	4,841	73.9	25,817	11,374
Burlington	10 mos. 255	952,378	185,612	1,212,907	192,812	203,743	48,698	88.1	144,935	64,826
Cambria & Indiana.....	Oct. 37	118,564	.....	118,708	8,826	40,654	414	56.58	19,726	97,513
Canadian Pacific Lines in Maine.....	10 mos. 37	944,480	.....	945,546	87,162	431,499	95,841	71.80	266,625	36,686
Canadian Pacific	Oct. 234	1,071,516	12,367	1,315,34	15,936	25,842	10,629	81.0	24,943	15,503
Canadian Pacific	10 mos. 234	1,602,037	142,909	1,871,323	380,184	381,197	701,562	87.0	242,601	138,882
Canadian Pacific Lines in Vermont.....	Oct. 91	56,648	7,240	74,059	8,846	18,394	4,498	133.1	24,518	32,056
Central of Georgia.....	10 mos. 91	491,576	93,049	687,131	144,011	220,469	604,248	133.1	367,792	438,149
Central of Georgia	Oct. 1,926	1,186,774	81,410	1,397,890	162,522	275,204	51,474	79.9	281,128	169,131
Central of Georgia	10 mos. 1,926	9,867,003	1,032,082	12,301,065	1,637,505	2,444,353	525,142	88.4	1,425,549	309,833
Central of New Jersey.....	Oct. 710	2,202,234	369,335	2,762,498	177,270	460,641	45,454	69.7	835,708	278,716
Central Vermont	10 mos. 709	18,645,217	3,803,705	24,189,883	1,485,169	4,032,080	10,898,208	73.7	6,367,133	2,053,956
Central Vermont	Oct. 427	406,301	21,329	427,630	140,115	77,866	11,968	96.8	15,531	13,254
Central Vermont	10 mos. 443	3,331,680	345,070	4,078,388	868,692	720,588	125,211	97.5	100,481	175,858
Chesapeake & Ohio.....	Oct. 3,102	11,035,837	264,882	11,738,030	927,636	1,905,159	194,545	49.8	5,897,873	4,460,982
Chicago & Eastern Illinois.....	10 mos. 3,102	81,505,904	2,598,039	87,374,932	9,169,498	16,738,003	1,983,612	61.0	34,075,418	23,803,572
Chicago & Eastern Illinois	Oct. 927	1,422,727	101,868	1,514,595	155,106	187,252	51,803	68.1	451,500	372,300
Chicago & Eastern Illinois	10 mos. 927	9,114,875	1,159,832	11,659,646	1,450,827	1,850,012	542,828	80.4	2,288,964	1,498,964
Chicago & Illinois Midland.....	Oct. 131	287,639	954	297,035	35,281	63,054	78,171	72.0	83,071	55,287
Chicago & North Western.....	10 mos. 131	2,760,526	10,103	2,854,889	308,261	1,319,555	191,645	72.6	783,779	519,306
Chicago & North Western	Oct. 8,397	6,367,034	827,392	7,194,426	1,378,343	1,378,343	183,599	76.4	1,937,574	1,405,062
Chicago & North Western	10 mos. 8,391	50,746,556	9,429,578	67,194,434	11,179,036	14,606,070	1,908,163	86.5	7,752,658	1,597,520
Chicago, Burlington & Quincy.....	Oct. 8,949	7,687,783	765,667	9,388,832	1,180,452	1,296,688	239,776	64.7	3,306,475	2,423,693
Chicago Great Western.....	10 mos. 8,968	60,748,464	7,662,481	76,440,145	10,078,841	12,779,881	2,410,925	73.4	20,321,270	12,982,831
Chicago Great Western	Oct. 1,505	1,569,193	37,779	1,730,597	229,724	223,639	54,617	66.6	578,469	484,107
Chicago Great Western	10 mos. 1,505	12,694,075	401,294	14,075,504	2,131,747	2,261,380	563,299	78.8	2,988,610	2,083,600
Chicago, Indianapolis & Louisville.....	Oct. 549	701,534	43,447	813,442	86,932	155,267	28,397	75.4	199,917	158,266
Chicago	10 mos. 549	5,753,483	466,449	6,847,266	744,388	1,497,513	288,209	86.0	960,945	544,196

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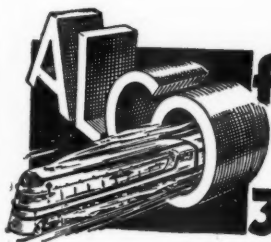
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AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET • NEW YORK • N.Y.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues				Maintenance of way and equipment			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	Total (inc. misc.)	Way and structures	Equipment	Traffic	Trans- portation	Total	Operating ratio	Net from railway operation			1938	1937
Chicago, Milwaukee, St. Paul & Pacific.....	10 mos.	\$8,277,817	\$605,806	\$8,777,152	\$1,678,481	\$1,617,385	\$243,270	\$3,544,245	\$7,433,583	76.1	\$2,336,569	\$1,600,569	\$1,584,518	\$984,518	\$7,806,215
Chicago, Rock Island & Pacific.....	10 mos.	67,769,101	6,446,304	74,215,405	12,655,820	12,575,854	2,307,490	32,851,505	67,219,205	82.0	14,757,201	7,337,201	3,227,105	540,198	3,393,361
Chicago, Rock Island & Pacific.....	10 mos.	5,663,924	592,949	6,256,873	9,004,205	12,212,909	2,324,348	24,981,735	51,653,569	84.8	9,247,426	4,526,798	1,331,205	3,393,361	8,050
Chicago, Rock Island & Pacific.....	10 mos.	49,695,025	6,180,716	55,875,741	62,181	34,722	19,629	129,681	269,268	66.3	137,012	112,382	43,710	369,223	142,064
Chicago, Rock Island & Pacific.....	10 mos.	263,980	27,412	291,392	406,280	358,137	193,882	1,390,742	2,873,909	70.0	1,332,539	980,738	142,064	105,003	59,749
Chicago, Rock Island & Pacific.....	10 mos.	2,871,122	276,348	3,147,470	682,211	268,381	38,614	669,164	1,252,249	80.5	402,764	180,596	59,749	268,011	308,787
Chicago, St. Paul, Minneapolis & Omaha.....	10 mos.	1,348,920	99,992	1,448,912	1,555,016	2,339,549	376,999	6,457,142	11,995,642	86.4	1,891,334	765,018	308,787	269,750	2,698,896
Clinchfield Railroad.....	10 mos.	580,594	3,513	584,107	39,481	98,630	18,143	108,124	280,221	47.5	309,649	261,365	299,017	69,747	709,273
Colorado & Southern.....	10 mos.	4,478,238	343,978	4,822,216	589,870	981,349	18,247	1,018,867	2,379,770	57.0	2,064,270	1,570,271	1,727,413	2,698,896	34,295
Fort Worth & Denver City.....	10 mos.	5,021,136	37,193	5,058,329	376,801	99,272	13,440	2,240,910	4,402,324	71.6	1,744,402	84,587	51,885	90,747	709,273
Columbus & Greenville.....	10 mos.	859,030	73,527	932,557	546,228	1,097,476	139,444	2,220,163	4,272,393	80.1	1,060,505	312,741	90,747	709,273	83,420
Delaware & Hudson.....	10 mos.	1,950,268	89,190	2,039,458	143,572	310,789	42,787	745,885	1,331,086	62.9	783,895	666,899	658,851	252,608	2,583,084
Delaware, Lackawanna & Western.....	10 mos.	15,467,202	969,822	16,437,024	1,656,855	3,008,500	434,534	7,180,259	13,314,734	77.2	3,934,078	2,510,006	2,427,825	569,885	5,167,890
Denver & Rio Grande Western.....	10 mos.	3,042,162	539,264	3,581,426	200,652	778,078	115,199	1,898,692	3,134,612	76.5	961,217	2,153,451	1,758,079	5,167,890	412,645
Denver & Salt Lake.....	10 mos.	2,590,990	110,647	2,701,637	329,177	498,229	65,036	926,429	1,893,069	67.4	917,485	660,556	551,820	412,645	334,318
Detroit & Mackinac.....	10 mos.	106,416	2,173	108,589	123,028	117,600	9,944	254,701	337,845	87.4	2,388,463	1,878,81	126,303	143,303	651,628
Detroit & Toledo Shore Line.....	10 mos.	625,867	26,053	651,920	25,208	20,104	9,072	76,267	143,095	55.1	116,673	84,532	595,981	651,628	22,215
Detroit, Toledo & Iron Range.....	10 mos.	436,616	174	436,790	46,897	91,567	11,187	115,777	282,067	49.4	58,916	55,694	47,896	98,917	109,007
Duluth, Missabe & Iron Range.....	10 mos.	3,802,046	2,020	3,804,066	459,410	816,602	3,957	259,601	533,252	67.4	1,297,618	850,740	682,961	1,080,945	1,943,052
Duluth, Missabe & Iron Range.....	10 mos.	1,218,364	1,052	1,219,416	1,212,219	1,317,17	3,957	259,601	533,252	40.3	790,550	682,961	2,203,906	1,080,945	1,943,052
Duluth, Missabe & Iron Range.....	10 mos.	7,215,603	16,906	7,232,509	1,241,866	1,848,560	42,400	2,188,824	5,636,629	65.8	2,936,175	2,209,835	2,203,906	1,080,945	1,943,052
Duluth, Winnipeg & Pacific.....	10 mos.	79,185	1,984	81,169	27,261	14,558	2,265	43,698	91,353	108.0	—6,771	—14,623	—29,718	—6,022	—6,022
Elgin, Joliet & Eastern.....	10 mos.	869,687	15,427	885,114	249,821	221,730	22,777	437,980	973,042	106.4	—58,190	—136,827	—270,743	9,562	9,562
Erie.....	10 mos.	1,048,577	....	1,048,577	1,234,940	209,407	14,224	456,952	839,556	68.0	395,384	289,595	270,743	3,884,531	467,280
New Jersey & New York.....	10 mos.	8,056,310	....	8,056,310	9,214,643	2,094,942	144,900	4,053,340	7,712,223	83.7	1,502,420	513,254	467,280	3,884,531	467,280
New York, Susquehanna & Western.....	10 mos.	6,367,673	377,101	6,744,774	627,668	1,320,864	168,089	2,643,038	5,014,820	69.2	2,232,866	1,642,581	1,314,833	1,594,303	1,594,303
Florida East Coast.....	10 mos.	48,648,079	4,060,122	52,708,201	6,380,213	12,249,849	1,689,381	23,745,689	46,606,063	81.9	10,518,096	4,855,280	2,137,199	13,272,866	13,272,866
Georgia Railroad.....	10 mos.	306,271	11,337	317,608	344,757	47,302	18,912	133,682	247,820	71.9	96,937	81,362	84,678	—3,851	—3,851
Georgia & Florida.....	10 mos.	2,561,014	121,000	2,682,014	233,336	486,612	18,449	1,289,447	2,426,594	83.3	485,388	329,763	438,298	527,351	527,351
Grand Trunk Western.....	10 mos.	12,443,816	820,381	13,264,197	2,180,657	3,168,851	435,270	7,207,437	13,754,709	95.9	589,016	—1,303,699	—1,303,699	2,328,622	2,328,622
Canadian National Lines in New England.....	10 mos.	110,789	2,479	113,268	35,440	15,205	2,573	71,772	1,353,351	110.5	—12,901	—28,206	—56,692	—37,667	—37,667
Great Northern.....	10 mos.	8,229,094	291,515	8,520,609	1,028,139	1,231,176	173,132	2,489,664	5,154,806	56.7	3,935,470	3,218,029	3,003,140	3,028,246	3,028,246

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1938—CONTINUED

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	Total (inc. misc.)	Maintenance of way and structures	Traffic	Trans- portation			1938	1937
Great Northern.....	8,072	8,229,094	3,840,131	12,069,225	1,884,886	22,642,173	4,479,345	73.2	339,964	\$24,657	\$10,218
Green Bay & Western.....	234	1,221,043	1,048,519	2,269,562	226,568	6,121	44,292	73.2	327,242	140,723	230,296
Gulf & Ship Island.....	259	817,495	72,472	890,000	22,984	2,756	48,113	97.3	14,568	22,742	4,004
Gulf, Mobile & Northern.....	824	567,525	23,671	591,196	92,146	40,160	154,794	98.4	10,465	251,064	17,612
Illinois Central.....	891	4,996,244	221,221	5,217,465	724,374	399,254	1,559,569	65.8	212,703	124,553	105,879
Illinois Central System.....	4,951	7,829,611	7,333,074	15,162,685	756,080	1,693,311	3,082,408	70.2	1,628,847	698,539	1,137,932
Yazoo & Mississippi Valley.....	4,952	61,368,800	7,483,209	68,852,009	7,187,107	28,985,555	55,413,948	74.1	19,379,043	11,489,115	11,351,861
Illinois Terminal.....	1,619	1,350,460	90,642	1,441,102	116,534	28,143	538,402	60.2	609,858	382,290	415,836
Illinois Central System.....	1,619	10,447,001	705,268	11,152,269	1,075,953	278,761	4,595,819	68.1	3,796,370	2,389,384	2,431,630
Illinois Central System.....	6,571	71,815,801	8,188,477	80,004,278	8,263,060	16,014,791	33,681,374	62.9	3,973,263	2,847,046	2,554,100
Illinois Terminal.....	496	389,346	51,163	440,509	56,962	15,987	167,845	73.3	23,175,413	15,038,492	13,879,241
Kansas City Southern.....	879	9,974,681	22,323	10,000,004	1,130,083	50,724	3,225,084	68.46	155,476	104,362	107,997
Kansas, Oklahoma & Gulf.....	327	225,030	538	225,568	34,742	8,556	44,956	71.83	1,232,837	628,152	1,272,783
Lake Superior & Ishpeming.....	156	157,166	41	157,197	23,423	16,260	33,334	61.7	4,072,218	263,352	429,694
Lehigh & Hudson River.....	96	146,473	58	146,531	18,898	3,626	45,078	64.0	3,941,985	2,921,985	2,887,055
Lehigh & New England.....	205	310,269	1,210	311,479	26,744	6,294	110,372	47.2	120,487	94,575	102,631
Lehigh Valley.....	207	2,773,896	.....	2,773,896	297,134	597,802	2,108,563	72.0	92,979	91,806	175,304
Louisiana & Arkansas.....	1,286	3,701,823	148,071	3,849,894	17,003	88,943	43,219	85.3	143,085	72,342	149,201
Louisiana & Arkansas.....	1,303	29,874,603	1,778,575	31,653,178	1,907,637	6,695,054	15,051,740	66.1	49,953	33,506	21,563
Louisiana & Arkansas.....	606	534,959	9,214	544,173	65,310	3,428	1,362,617	72.0	333,088	199,100	188,648
Louisiana & Arkansas.....	606	4,804,716	93,884	4,898,600	658,308	711,517	3,260,024	68.2	99,758	74,408	69,652
Louisiana, Arkansas & Texas.....	240	94,039	40	94,079	18,898	3,626	45,078	75.3	691,119	480,551	550,969
Louisville & Nashville.....	240	909,958	1,679	911,637	118,167	207,759	36,651	66.1	49,953	33,506	21,563
Maine Central.....	4,938	54,942,956	487,892	55,430,848	7,043,433	1,701,688	5,339,127	72.0	333,088	199,100	188,648
Maine Central.....	995	790,648	64,046	854,694	143,501	13,506	343,834	68.9	1,313,773	951,624	744,153
Midland Valley.....	1,000	7,537,365	847,793	8,385,158	1,491,861	116,978	3,577,606	77.2	7,705,742	4,111,889	2,863,486
Midland Valley.....	352	1,118,571	38	1,118,609	13,556	2,703	31,555	63.0	7,705,742	4,111,889	2,863,486
Minneapolis & St. Louis.....	1,523	918,192	7,514	925,706	21,961	9,681	33,303	64.6	1,799,983	1,346,039	1,119,305
Minneapolis, St. Paul & Sault Ste. Marie.....	1,524	7,022,727	94,582	7,117,309	251,685	1,261	377,600	79.4	20,748	15,640	319
Mississippi Central.....	4,290	2,134,983	76,131	2,211,114	7,043,433	1,701,688	5,339,127	87.0	125,358	74,804	59,745
Mississippi Central.....	4,297	17,766,334	950,181	18,716,515	6,349,193	1,452,897	50,218,396	68.9	2,432,768	1,760,212	1,869,688
Duluth, South Shore & Atlantic.....	995	790,648	64,046	854,694	143,501	13,506	343,834	77.6	14,499,334	9,008,498	13,893,560
Spokane International.....	1,000	7,537,365	847,793	8,385,158	1,491,861	116,978	3,577,606	71.52	268,891	193,616	153,988
Spokane International.....	352	1,118,571	38	1,118,609	13,556	2,703	31,555	76.63	2,156,712	1,443,462	1,063,147
Mississippi Central.....	150	70,346	1,842	72,188	74,601	8,134	13,383	46.1	492,211	373,255	308,624
Missouri & Arkansas.....	150	625,080	18,018	643,098	113,170	91,786	205,453	56.8	61,569	51,310	60,554
Missouri & Arkansas.....	365	81,539	16,084	97,623	20,862	10,546	28,595	72.899	1,443,462	1,063,147	1,063,147
Missouri-Illinois.....	164	58,327	11,392	69,719	140,297	77,377	218,220	58.8	492,211	373,255	308,624
Missouri-Kansas-Texas Lines.....	193	104,822	593	105,415	12,466	2,497	35,826	78.0	41,563	28,070	23,024
Missouri-Kansas-Texas Lines.....	193	847,254	4,892	852,146	128,173	39,041	713,438	78.0	93,677	39,677	32,541
Missouri Pacific.....	3,294	19,208,651	1,801,021	21,009,672	3,344,988	1,102,489	9,206,852	80.9	126,675	69,805	43,843
Missouri Pacific.....	7,173	6,735,904	426,019	7,161,923	1,412,823	240,594	5,936,519	73.8	28,191	22,457	12,647
Missouri Pacific.....	7,174	56,887,994	4,232,565	61,120,559	12,770,721	2,393,334	53,880,843	80.4	1,853,656	1,338,394	874,339
Missouri Pacific.....	10 mos.	.....	.....	.....	.....	.....	.....	.....	13,128,567	8,166,995	4,180,559
Missouri Pacific.....	10 mos.	.....	.....	.....	.....	.....	.....	.....	22,457	12,647	11,821
Missouri Pacific.....	10 mos.	.....	.....	.....	.....	.....	.....	.....	156,635	95,722	11,830
Missouri Pacific.....	10 mos.	408,461	235,632	126,895
Missouri Pacific.....	10 mos.	2,555,139	1,757,565	2,752,776

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NEW HIGH RE



Railroads using EMC Diesel Switchers have definitely proved these clear-cut economies . . .

- Fuel costs normally reduced 75 per cent.
- Maintenance costs reduced 50 per cent.
- Enginehouse expenses, including lubricants, water, supplies,—reduced 66 per cent.
- Availability for service averages 94 per cent.
- Uniform efficiency throughout entire year.
- Safer and faster operation through better visibility—absence of smoke and steam—higher initial tractive effort.
- Elimination of fire hazard and smoke complaints.
- Less track wear and fewer derailments.
- Combined tangible savings normally sufficient to liquidate the Diesel's first cost in 5 years.

ELECTRO-MOTIVE

SUBSIDIARY OF GENERAL MOTORS A

RECORDS *for*



Economy

- **T**HE Rock Island now has 37 EMC Diesel Switchers in service . . . Each Switcher is saving \$1,000.00 per month over and above carrying and amortization charges . . . Operating at an availability of 98 per cent, these 37 EMC Diesels have replaced 80 steam switchers . . .

EMC CORPORATION
MORTON GRANGE, ILLINOIS, U. S. A.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1938—Continued

Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income	
		Freight	Passenger	Total (inc. misc.)	Way and structures	Maintenance of equipment	Traffic			Operating income	1937
Gulf Coast Lines.....	Oct.	\$945,559	\$42,775	\$1,050,662	\$200,117	\$164,907	\$366,895	74.80	\$226,925	\$154,016	\$17,761
International Great Northern.....	10 mos.	10,792,502	411,984	11,787,438	1,915,896	1,844,456	457,558	82.76	3,211,048	2,871,390	340,658
Mobile & Ohio.....	Oct.	862,365	1,051,664	1,913,629	1,051,664	1,913,629	1,913,629	84.3	1,651,147	1,051,664	599,483
Monongahela.....	10 mos.	8,118,766	800,387	9,988,700	1,581,417	1,949,588	315,213	88.7	1,127,929	531,012	596,917
Montour.....	Oct.	1,003,238	31,098	1,077,245	124,191	189,771	363,392	71.2	310,168	246,959	63,209
Nashville, Chattanooga & St. Louis.....	10 mos.	8,824,816	290,590	9,591,383	1,171,744	1,707,159	3,623,116	76.8	2,224,630	1,616,116	608,514
Montreal & Maine.....	Oct.	362,131	607	362,738	23,408	27,172	73,338	34.9	237,514	213,616	23,898
Montreal & Ottawa.....	10 mos.	2,681,181	7,312	2,705,126	207,005	206,716	4,960	39.9	1,625,651	1,395,959	229,692
Montreal & Western.....	Oct.	211,506	225	211,936	15,518	43,298	953	51.7	110,558	72,881	37,677
Nashville, Chattanooga & St. Louis.....	10 mos.	1,348,497	225	1,348,998	112,337	383,718	9,716	67.0	450,296	251,606	198,690
Nebraska Northern.....	Oct.	1,091,388	81,952	1,305,578	135,622	196,419	61,680	68.8	406,977	329,912	77,065
New York Central.....	10 mos.	9,221,411	870,922	11,296,631	1,179,186	1,941,018	642,019	78.5	2,429,482	1,677,358	752,124
New York Central.....	Oct.	55,428	494	56,428	10,840	4,945	1,233	52.6	32,204	17,306	14,898
Pittsburgh & Lake Erie.....	10 mos.	397,572	9,429	456,601	84,903	33,656	12,292	60.7	179,476	84,850	94,626
New York, Chicago & St. Louis.....	Oct.	21,077,579	4,781,595	29,312,752	3,203,804	5,609,527	5,500,665	73.1	7,881,883	5,186,808	2,695,075
New York, Chicago & St. Louis.....	10 mos.	163,706,518	49,328,428	242,023,064	26,551,750	47,850,372	101,618,728	80.2	47,972,829	19,855,181	28,117,648
Pittsburgh & Lake Erie.....	Oct.	1,543,438	40,245	1,634,067	140,339	469,410	25,836	75.1	1,227,732	406,335	821,397
New York, Chicago & St. Louis.....	10 mos.	10,414,308	426,109	11,284,420	1,100,451	3,702,674	276,217	91.0	1,012,952	268,601	744,351
New York, Chicago & St. Louis.....	Oct.	3,347,318	60,495	3,520,273	485,255	1,178,791	1,206,406	63.9	1,271,760	1,096,782	174,978
New York, Chicago & St. Louis.....	10 mos.	27,853,063	728,864	29,622,375	3,081,754	4,765,322	1,190,627	72.8	8,068,605	6,126,146	1,942,459
New York, New Haven & Hartford.....	Oct.	4,382,826	2,044,842	7,177,462	679,122	1,014,149	112,727	67.8	4,864,620	1,800,342	3,064,278
New York Connecting.....	10 mos.	31,585,760	21,523,306	59,585,747	9,508,555	10,622,333	1,070,474	84.0	9,530,936	4,435,936	5,095,000
New York Connecting.....	Oct.	2,627,911	280,999	2,908,910	25,004	11,129	33,263	25.3	2,097,772	1,657,907	439,865
New York Connecting.....	10 mos.	2,005,471	.....	2,005,471	215,811	103,781	297,853	30.2	1,459,857	1,055,150	404,707
New York, Ontario & Western.....	Oct.	539,370	2,193	595,340	54,125	139,840	264,316	83.3	99,503	46,052	53,451
Norfolk & Western.....	10 mos.	4,538,890	371,538	5,376,282	699,567	1,316,223	137,056	93.5	350,820	183,536	167,284
Norfolk & Western.....	Oct.	8,114,477	151,241	8,500,061	1,360,129	1,783,811	4,213,891	49.6	4,283,170	3,085,958	1,197,212
Norfolk Southern.....	Oct.	58,020,024	1,593,610	61,492,201	6,717,679	12,715,300	15,811,511	62.6	22,973,800	14,000,383	8,973,417
Norfolk Southern.....	10 mos.	368,516	2,932	385,584	68,747	51,763	23,571	79.0	304,506	46,521	257,985
Norfolk Southern.....	Oct.	3,534,340	46,594	3,729,129	441,403	519,560	1,363,247	80.3	734,404	390,378	344,026
Norfolk Southern.....	Oct.	4,938,733	235,626	5,648,976	857,816	3,343,438	2,028,880	73.5	4,154,510	3,888,128	266,382
Norfolk Southern.....	10 mos.	39,291,432	3,452,248	47,153,394	6,967,017	9,567,144	1,739,143	84.2	7,450,420	1,648,418	5,802,002
Northwestern Pacific.....	Oct.	223,153	57,288	311,071	53,287	48,972	3,562	91.9	25,352	5,855	19,497
Oklahoma City-Ada-Atoka.....	10 mos.	1,778,492	535,260	2,563,190	731,044	492,301	36,879	117.8	647,103	647,103	.....
Oklahoma City-Ada-Atoka.....	Oct.	42,641	441	44,994	12,362	1,237	729	62.7	16,774	13,983	2,791
Oklahoma City-Ada-Atoka.....	10 mos.	354,443	3,724	376,553	91,365	21,508	8,328	68.5	118,452	85,590	32,862
Pennsylvania.....	Oct.	26,410,616	5,424,748	35,256,314	3,018,600	6,217,185	699,728	66.0	11,984,846	7,984,308	3,999,538
Long Island.....	10 mos.	211,890,616	54,096,718	294,906,240	27,532,686	52,725,686	6,616,571	71.6	83,734,921	51,733,940	32,000,981
Long Island.....	Oct.	686,252	17,210	703,462	172,116	375,831	8,732	75.3	513,923	197,299	316,624
Long Island.....	10 mos.	5,123,801	13,579,999	19,592,197	1,613,871	3,207,365	81,478	75.5	4,808,816	1,678,370	3,130,446
Pennsylvania-Reading Seashore Lines.....	Oct.	265,104	100,037	389,536	70,546	54,588	5,543	103.8	404,497	94,596	309,901
Pere Marquette.....	10 mos.	2,141,454	2,237,933	4,596,141	726,835	735,979	73,354	100.0	4,596,141	4,596,141	.....
Pere Marquette.....	Oct.	2,663,353	58,658	2,722,011	324,585	494,931	62,231	71.1	2,770,955	611,021	2,159,934
Pittsburgh & Shawmut.....	10 mos.	18,314,796	830,036	20,386,496	3,040,535	4,649,614	630,768	86.7	2,712,262	1,195,965	1,516,297
Pittsburgh & Shawmut.....	Oct.	41,491	42,875	84,366	15,782	14,962	1,303	115.5	49,527	8,291	41,236
Pittsburgh & Shawmut.....	10 mos.	375,648	381,667	757,315	107,068	145,512	15,330	117.1	446,745	79,855	366,890
Pittsburgh & Shawmut.....	Oct.	268,760	120	268,880	33,764	73,964	17,787	76.7	220,193	42,674	177,519
Pittsburgh & Shawmut.....	10 mos.	2,243,236	120	2,414,980	399,185	561,075	158,296	80.3	476,951	289,898	187,053
Pittsburgh, Shawmut & Northern.....	Oct.	83,927	.....	83,927	12,674	10,363	1,006	68.3	26,917	22,001	4,916
Reading.....	10 mos.	698,338	1	705,051	129,966	114,603	15,565	81.4	131,045	81,957	49,088
Reading.....	Oct.	4,248,406	270,651	4,722,715	319,393	705,579	74,314	63.6	1,719,675	1,527,536	192,139
Reading.....	10 mos.	35,118,205	2,639,748	39,602,062	2,639,258	7,450,356	755,712	74.2	10,226,709	7,718,001	2,508,708
Richmond, Fredericksburg & Potomac.....	Oct.	382,601	123,654	602,490	53,536	112,922	9,273	72.1	168,310	108,946	59,364
Richmond, Fredericksburg & Potomac.....	10 mos.	3,588,816	1,440,028	6,377,802	635,684	1,270,440	95,004	75.2	1,528,638	807,139	721,499

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1938—CONTINUED

MONTHS OF CALENDAR YEAR 1938—CONTINUED														
Name of road	Av. mileage operated during period	Operating revenues			Operating expenses			Operating ratio	Net from railway operation	Net railway operating income				
		Freight	Passenger	Total (inc. misc.)	Maintenance of way and structures	Traffic	Trans- portation			Operating income	1938	1937		
Rutland	407	\$192,289	\$23,103	\$215,392	\$67,611	\$10,848	\$78,459	108.2	\$21,976	\$51,384	\$52,380	\$52,380	\$52,380	
St. Louis-San Francisco	407	\$1,580,602	\$20,405	\$1,601,007	\$429,268	\$405,317	\$1,403,175	108.2	\$199,184	\$486,979	\$500,039	\$500,039	\$500,039	
St. Louis, San Francisco & Texas	4,885	\$3,098,557	\$2,744,993	\$5,843,550	\$4,155,027	\$1,688,523	\$5,843,550	78.3	\$902,560	\$653,973	\$652,572	\$652,572	\$652,572	
St. Louis Southwestern Lines	266	\$113,531	\$95	\$113,626	\$120,144	\$7,963	\$128,107	88.9	\$3,994,231	\$645,808	\$25,962	\$25,962	\$25,962	
Seaboard Air Line	1,706	\$1,322,668	\$7,086	\$1,329,754	\$1,322,668	\$23,248	\$1,345,916	91.9	\$9,689	\$1,310	\$23,940	\$23,940	\$23,940	
Southern Railway	4,318	\$2,760,018	\$248,806	\$3,008,824	\$2,760,018	\$23,248	\$2,783,266	79.3	\$287,258	\$205,427	\$205,427	\$205,427	\$205,427	
Alabama Great Southern	6,602	\$7,421,010	\$696,384	\$8,117,394	\$7,421,010	\$23,248	\$7,444,258	64.0	\$663,344	\$34,133	\$34,133	\$34,133	\$34,133	
Cincinnati, New Orleans & Texas Pacific	6,606	\$9,918,562	\$7,244,868	\$17,163,430	\$9,918,562	\$23,248	\$9,941,810	74.1	\$3,947,057	\$2,891,639	\$1,482,581	\$1,482,581	\$1,482,581	
Georgia Southern & Florida	315	\$599,290	\$59,233	\$658,523	\$599,290	\$59,233	\$658,523	85.3	\$495,274	\$245,274	\$191,159	\$191,159	\$191,159	
New Orleans & Northeastern	337	\$4,642,811	\$25,105	\$4,667,916	\$4,642,811	\$25,105	\$4,667,916	86.2	\$4,511,630	\$176,630	\$907,718	\$907,718	\$907,718	
Northern Alabama	204	\$1,085,557	\$38,952	\$1,124,509	\$1,085,557	\$38,952	\$1,124,509	62.2	\$3,338,489	\$2,693,199	\$2,305,786	\$2,305,786	\$2,305,786	
Southern Pacific	100	\$3,500	\$1,020	\$4,520	\$3,500	\$1,020	\$4,520	72.5	\$20,119,816	\$13,849,970	\$10,328,781	\$10,328,781	\$10,328,781	
Southern Pacific Steamship Lines	8,707	\$12,180,792	\$1,636,877	\$13,817,669	\$12,180,792	\$1,636,877	\$13,817,669	62.5	\$264,918	\$188,020	\$212,839	\$212,839	\$212,839	
Texas & New Orleans	4,416	\$3,242,188	\$274,553	\$3,516,741	\$3,242,188	\$274,553	\$3,516,741	76.5	\$1,307,131	\$741,009	\$1,080,374	\$1,080,374	\$1,080,374	
Spokane, Portland & Seattle	947	\$711,643	\$30,035	\$741,678	\$711,643	\$30,035	\$741,678	62.1	\$539,679	\$384,125	\$416,141	\$416,141	\$416,141	
Tennessee Central	287	\$225,756	\$3,845	\$229,601	\$225,756	\$3,845	\$229,601	67.8	\$4,013,080	\$2,736,825	\$3,101,586	\$3,101,586	\$3,101,586	
Texas & Pacific	1936	\$2,088,494	\$194,811	\$2,283,305	\$2,088,494	\$194,811	\$2,283,305	95.6	\$7,413	\$9,644	\$-9,644	\$-9,644	\$-9,644	
Texas Mexican	1937	\$1,845,379	\$2,042,127	\$3,887,506	\$1,845,379	\$2,042,127	\$3,887,506	91.0	\$150,530	\$20,501	\$-42,632	\$-42,632	\$-42,632	
Toledo, Peoria & Western	162	\$694,982	\$4,928	\$700,910	\$694,982	\$4,928	\$700,910	58.6	\$85,016	\$64,383	\$64,383	\$64,383	\$64,383	
Union Pacific System	239	\$237,261	\$4	\$237,265	\$237,261	\$4	\$237,265	65.8	\$79,539	\$56,874	\$326,350	\$326,350	\$326,350	
Utah	9,903	\$13,644,691	\$1,326,379	\$14,971,070	\$13,644,691	\$1,326,379	\$14,971,070	44.3	\$36,989	\$31,189	\$20,414	\$20,414	\$20,414	
Virginian	111	\$79,064	\$79,064	\$79,064	\$79,064	\$79,064	\$79,064	64.0	\$163,364	\$108,181	\$108,181	\$108,181	\$108,181	
Wabash	638	\$1,712,441	\$34,358	\$1,746,799	\$1,712,441	\$34,358	\$1,746,799	68.8	\$4,696,545	\$3,456,282	\$2,646,482	\$2,646,482	\$2,646,482	
Ann Arbor	294	\$3,611,043	\$1,978,306	\$5,589,349	\$3,611,043	\$1,978,306	\$5,589,349	78.5	\$27,085,641	\$15,044,119	\$7,885,627	\$7,885,627	\$7,885,627	
Western Maryland	879	\$1,263,425	\$7,542	\$1,270,967	\$1,263,425	\$7,542	\$1,270,967	93.7	\$35,175	\$19,846	\$19,609	\$19,609	\$19,609	
Western Pacific	1,208	\$1,739,050	\$34,627	\$1,773,677	\$1,739,050	\$34,627	\$1,773,677	77.8	\$120,955	\$31,243	\$33,456	\$33,456	\$33,456	
Wheeling & Lake Erie	508	\$1,045,886	\$16	\$1,045,902	\$1,045,886	\$16	\$1,045,902	78.9	\$1,108,543	\$836,416	\$646,364	\$646,364	\$646,364	
	508	\$3,441,388	\$11,432	\$3,452,820	\$3,441,388	\$11,432	\$3,452,820	78.9	\$1,108,543	\$836,416	\$646,364	\$646,364	\$646,364	
								86.7	\$108,778	\$61,124	\$20,245	\$20,245	\$20,245	
								52.1	\$114,910	\$87,122	\$69,141	\$69,141	\$69,141	
								68.2	\$79,231	\$48,339	\$264,948	\$264,948	\$264,948	
								64.6	\$5,730,381	\$4,496,576	\$3,263,251	\$3,263,251	\$3,263,251	
								72.0	\$34,050,684	\$21,622,162	\$14,014,724	\$14,014,724	\$14,014,724	
								77.9	\$17,623	\$2,251	\$3,089	\$3,089	\$3,089	
								97.1	\$1,427	\$-68,408	\$-78,819	\$-78,819	\$-78,819	
								45.9	\$58,655	\$790,952	\$96,584	\$96,584	\$96,584	
								51.5	\$7,526,414	\$6,158,962	\$7,744,535	\$7,744,535	\$7,744,535	
								72.1	\$1,142,387	\$909,485	\$553,389	\$553,389	\$553,389	
								81.3	\$6,215,838	\$4,107,732	\$620,171	\$620,171	\$620,171	
								84.7	\$47,169	\$66,815	\$13,889	\$13,889	\$13,889	
								86.6	\$379,676	\$179,815	\$43,060	\$43,060	\$43,060	
								63.2	\$480,808	\$419,186	\$444,532	\$444,532	\$444,532	
								69.3	\$3,403,615	\$2,692,401	\$2,767,765	\$2,767,765	\$2,767,765	
								67.8	\$81,184	\$495,899	\$322,199	\$322,199	\$322,199	
								98.8	\$144,852	\$-752,277	\$-1,505,357	\$-1,505,357	\$-1,505,357	
								69.3	\$337,763	\$207,097	\$285,407	\$285,407	\$285,407	
								74.3	\$2,254,213	\$1,179,556	\$1,626,008	\$1,626,008	\$1,626,008	



*F-1 Mechanical
Lubricator*

*Filter Type
Air Strainer*



Twin LIFE SAVERS

FAULTY lubrication and dirt are twin destroyers of compressor life. The F-1 Lubricator and the Air Filter are twin life savers . . . The Lubricator, independent of all engine oiling systems, injects oil in measured quantities only when the compressor is running, and at a rate proportional to its speed . . . The Filter frees the intake air of even the finest dust by causing it to flow at a slow rate through a close textured filtering element of very large area . . . These devices have so thoroughly demonstrated their advantages in numerous installations as to merit a more widespread application. * * *

WESTINGHOUSE AIR BRAKE CO.

General Office and Works: • WILMERDING, PENNA.

